Major Determinants of Adherence among Persons with Primary Hypertension

A thesis submitted during 2017 to the
University of Hyderabad in partial fulfilment of the award of a
Ph.D. degree in Psychology in the Centre for Health Psychology

by

Kallavarapu Vincent
Registration No. 13CPPH02
Senior Research Fellow, ICMR

Centre for Health Psychology
School of Medical Sciences

University of Hyderabad
Central University Campus P.O.
Gachibowli, Prof. C.R. Rao Road
Hyderabad - 500 046, Telangana, India

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Registration No. 13CPPH02
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Supervisor
Dr. Suvashisa Rana

Centre for Health Psychology
School of Medical Sciences

University of Hyderabad
Central University Campus P.O.
Gachibowli, Prof. C.R. Rao Road
Hyderabad - 500 046, Telangana, India

DECLARATION

I, Kallavarapu Vincent, hereby declare that this thesis entitled "*Major determinants of adherence among persons with primary hypertension*" submitted by me under the guidance and supervision of Dr. Suvashisa Rana is a bonafide research work which is also free from plagiarism. I also declare that it has not been submitted previously in part or in full to this University or any other University or Institution for the award of any degree or diploma. I hereby agree that my thesis can be deposited in Shodganga/INFLIBNET.

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(KALLAVARAPU VINCENT)
Registration No. 13CPPH02
Senior Research Fellow, ICMR

// Countersigned //

(Dr. SUVASHISA RANA)
Supervisor

CERTIFICATE

This is to certify that the thesis entitled "*Major determinants of adherence among persons with primary hypertension*" submitted by Kallavarapu Vincent, Senior Research Fellow, ICMR, bearing Registration Number 13CPPH02 in partial fulfilment of the requirements for award of Doctor of Philosophy in Psychology in the Centre for Health Psychology under School of Medical Sciences is a bonafide work carried out by him under my supervision and guidance.

This thesis is free from plagiarism and has not been submitted previously in part or in full to this or any other University or Institution for award of any degree or diploma.

Further, the student has the following publications before submission of the thesis for adjudication and has produced evidence for the same in the form of the reprint in the relevant area of his research:

1. **Vincent, K.**, Rana, S., & Nandinee, D. (2014). Living through challenges is a new opportunity': An interpretative phenomenological analysis on persons with cardiovascular disease. *Psychological Studies*, *60*(1), 33-40. doi: 10.1007/s12646-015-0301-2 (ISSN: 0974-9861). Part of its appears in Chapter III of this thesis.

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4. International Conference on *Applicability and Relevance of Psycho-educational Testing in Human Life* held on 20–22 September 2013 at Agra, India (International)

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2. HP 827	Book Review Paper II	4	Pass
3. HP 828	Review Paper III	4	Pass
4. HP 829	Empirical Paper IV	4	Pass

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Supervisor Head of the Centre Dean of the School

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(KALLAVARAPU VINCENT)

ABSTRACT

Chronic disease—also termed as a non-communicable disease (NCD) or lifestyle disease—makes the human life complex, not only in contemporary India but also across the globe. The present study focuses on hypertension or high blood pressure (BP)—one of the most common chronic diseases. Out of its two types (primary and secondary), this study has dealt with primary hypertension. The main objectives of the present study were to identify the major determinants of adherence among persons with primary hypertension, explore their lived experiences, and conceptualise and recommend an appropriate intervention package to enhance the level of adherence with an aim to foster their positive living. The study was based on sequential mixed method design involving correlational design and interpretative phenomenological analysis. The sample consisted of 296 persons with primary hypertension who were selected by multi-stage sampling. As per the correlational design, assessment was done using five measures—Hypertension Compliance Scale, Hospital Anxiety and Depression Scale, Adult Hope Scale, Life Orientation Test–Revised, and Self-efficacy for Managing Chronic Disease 6-Item Scale. For interpretative phenomenological analysis, in-depth interview was conducted with the selected participants from high adherence and low adherence groups. Quantitative data were analysed by using suitable statistical tests, whereas qualitative data were analysed by using interpretative phenomenological analysis and data-driven thematic analysis. The results revealed three major determinants of adherence among persons with primary hypertension, such as anxiety, depression, and hope. Major determinants in respect of each of the four dimensions of adherence—medication, diet, exercise, and self-monitoring—were also found. The findings also revealed that the percentage of participants under low adherence category was three-and-half times more than that of the participants under high adherence category, which was alarming. Participants with co-morbid illness were found to be low in adherence compared to those without any co-morbid illness. The participants, those were happy in life, were

observed to be high in adherence. From the findings, it was also evident that there was no significant association observed between levels of adherence and other demographic variables—gender, marital status, occupation, duration of illness, and family history of primary hypertension. The study suggested a conceptual model of positive living amidst illness on the basis of its findings, in which a positive psychology intervention package (PPIP) was integrated. Describing the living pattern of persons with primary hypertension, the conceptual model emphasised on six aspects of life with chronic illness—perception, affect, attitude, habit, experience, and management. Basing on the findings and evidence-based studies, the PPIP was recommended involving four modules—hope therapy, solution-focused brief therapy, mindfulness-based cognitive therapy, and biofeedback. The PPIP emphasised primarily on the management of the chronic illness. Because of its impact, the living pattern would likely to be positive that would make the persons progress towards wellness dimension through positive living with happiness amidst illness. Nevertheless, the limitations, future directions, and implications of the study were also discussed.

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ABBREVIATIONS

ACLS	: Aerobics Center Longitudinal Study
APA	: American Psychological Association
ApA	: American Psychiatric Association
BP	: Blood Pressure
CARDIA	: Coronary Artery Development in Young Adults
CHD	: Coronary Heart Disease
DASH	: Dietary Approach to Stop Hypertension
GSR	: Galvanic Skin Response
HADS	: Hospital Anxiety and Depression Scale
HIV	: Human Immunodeficiency Virus
HYCOMPS	: Hypertension Compliance Scale
IPA	: Interpretative Phenomenological Analysis
JNC	: Joint National Committee
LOT-R	: Life Orientation Test-Revised
MBCT	: Mindfulness-based Cognitive Therapy
mmHg	: Millimetres mercury
NCD	: Non-communicable disease
NICE	: National Institute of Health and Clinical Excellence
NIH	: National Institute of Health
PPIP	: Positive Psychology Intervention Package
SFBT	: Solution-focused Brief Therapy
WHO	: World Health Organisation

CHAPTER I

INTRODUCTION

Chronic disease—also termed as a non-communicable disease (NCD) or lifestyle disease—makes the human life complex, not only in contemporary India but also across the globe. A disease becomes chronic, when it occurs insidiously, continues for a long time, and remains in a person's life with gradual progression. The four major types of NCDs—cardiovascular diseases, respiratory diseases, diabetes, and cancers—were accountable for 82 percent of NCD deaths across the globe in 2012 (World Health Organization [WHO], 2014). Moreover, these diseases affect both genders equally and cause high mortality rate (Kaplan, 2006). It is also pertinent to mention that about 42 percent of all NCD deaths in 2012 took place in people before attaining the age of 70 years (WHO, 2014). In India, NCD accounts for 60 percent of deaths and the probability of people dying from NCD between 30 to 70 years of age accounts for 26 percent (WHO, 2014). As per the report of the Centers for Disease Control and Prevention (CDC; 2013) of the United States, heart diseases and cancer together constitute 48 percent of all deaths.

The present study focuses on hypertension or high blood pressure (BP)—one of the most common chronic diseases. Out of its two types (primary and secondary), this study has dealt with primary hypertension. In addition to several other factors, as psychological factors play a pivotal role in the process of onset and progress of primary hypertension, its management, and how patients make lifestyle changes and cope with the related issues, this study focuses on adherence—an essential behavioural component of the management of primary hypertension. At the time of initial diagnosis of hypertension, the person is likely to experience psychological distress, specifically in the form of anxiety and depression bringing multidimensional challenges to life. Therefore, the present study has also tried to explore the role of positive health resource of persons

in mitigating such challenges, both in the periods of remission (a time when symptoms are diminished or temporarily resolved) and exacerbation (a time when symptoms flare up or become worse) of the chronic disease.

Primary hypertension

Primary hypertension is a long-term health condition with persistent elevation of BP in arteries. Being asymptomatic, hypertension becomes one of the major risk factors for stroke, coronary artery and peripheral vascular diseases, and chronic kidney disease (Lackland & Weber, 2015). About 90–95 percent of the population with hypertension has primary hypertension, meaning high BP because of nonspecific lifestyle and genetic factors. Lifestyle factors, such as consumption of junk food, excessive alcohol, and smoking increase the vulnerability of the person to hypertension (Poulter, Prabhakaran, & Caulfield, 2015). Change in lifestyle and adherence to medication are found to lower the high BP and eventually decrease the vulnerability to other related health complications. BP is measured as a ratio of systolic BP (an uppermost pressure in each cycle that occurs when heart contracts to pump the blood) and diastolic BP (a lowermost pressure that occurs when heart relaxed between beats and refills). A healthy person has a systolic BP between 100–140 millimetres mercury (mmHg) and diastolic BP within a range of 60–90mmHg. For most of the adults to be considered as hypertensive, the resting BP should persistently range above 140/90mmHg (Poulter et al., 2015). Presence of persistent high resting BP is used as a criterion of diagnosis of hypertension. Persistence is quantified as a monthly interval measurements of BP using sphygmomanometer for three times and the National Institute of Clinical Excellence recommends that the period is to be three months. American Heart Association has recommended at least three resting measurements of BP on two distinct health care visits (Aronow et al., 2011).

Generally, hypertension is defined as a consistent readings of above accepted normal values of systolic BP (139mmHg) or diastolic BP (89mmHg). National Clinical Guidance Centre (NICE) has recommended to set lower thresholds of BP (135mmHg systolic or 85mmHg diastolic), if measurements are obtained from 24-hour ambulatory or home monitoring (Krause et al., 2011). Joint National Committee (JNC) 7 has classified blood pressure into six categories (Chobanian et al., 2003)—normal category (systolic BP: 90–119mmHg, diastolic BP: 60–79mmHg), high normal or prehypertension category (systolic BP: 120–139mmHg, diastolic BP: 80–89mmHg), stage I hypertension (systolic BP: 140–159mmHg, diastolic BP: 90–99mmHg), stage II hypertension (systolic BP: 160–179mmHg, diastolic BP: 100–109mmHg), stage III hypertension or hypertensive emergency (systolic BP: ≥180mmHg, diastolic BP: ≥ 110mmHg), and isolated systolic hypertension (systolic BP: ≥140mmHg, diastolic BP: <90mmHg). BP is also categorised as resistant when the medications do not bring down BP to normal levels.

As hypertension is generally asymptomatic, it is often diagnosed while seeking treatment for an unrelated health problem or through screening. In certain rare cases, it has been observed that persons with hypertension report symptoms of headaches (predominantly at the back side of the head and often occurring in the morning), altered vision of fainting episodes, vertigo, and tinnitus (Agarwal, Williams, & Fisher, 2005). It is observed that these reported symptoms are related to associated anxiety rather than hypertension itself (Marshall, Wolfe, & McKevitt, 2012).

According to the WHO health statistics on India in the year 2012, 23.1 percent men and 22.6 percent women who are equal or more than 25 years of age have hypertension (WHO, 2012). High-risk condition like raised BP has caused approximately 51 percent of death from strokes and 45 percent from coronary artery disease. Overall,

raised BP is considered to cause 12.8 percent deaths globally amounting to 7.5 million deaths in year 2004. It is also observed that prevalence rates are high in lower and middle class populations in India (Rodgers, Lawes & MacMahon, 2000). This prevalence is primarily attributed to smoking, consumption of alcohol, and stress. Physical inactivity and dietary changes are found to be the two main causes of hypertension in the upper class (Buttar, Li, & Ravi, 2005). Gupta (2004) has observed that intake of food items like energy drinks, preserved food, and frozen food causing disturbance to heart rhythm leads to hypertension. Major psychological attributes, like stress, anxiety, Type A personality characteristics, and depression along with physiological aspects play pivotal role in worsening the health conditions of the hypertension patients (Celano & Huffman, 2011). Although there is an improvement of the diagnosis, treatment, and management of health problems, lack of adherence not only acts as a hindrance to better prognosis and quality of life of persons with hypertension, but also increases health care cost.

Adherence

Adherence is one of the essential components of managing primary hypertension. Adherence refers to the act of following the advice given by the doctors and other health care professionals for a specific treatment of an illness. Adherence is a lifelong process in persons with chronic illness. According to WHO, "Adherence is the extent to which a person's behaviour—taking medication, following a diet, and/or executing lifestyle changes—corresponds with agreed recommendations from a healthcare provider" (Burkhart & Sabate, 2003; Sabate, 2003)**.** Health psychologists commonly prefer the term adherence to compliance. The term adherence represents 'sticking to' something, whereas compliance indicates 'giving in' to something. As the process of treatment of an illness is considered as a collaboration between doctor and patient, the use of the term adherence is more appropriate.

In this study, adherence focuses primarily on the patient-related factors. Therefore, here adherence refers to the active participation of persons with primary hypertension in performing and sustaining behaviours including taking medication, maintaining a diet, following physical exercise, and self-monitoring as prescribed by the health care providers. It is well documented that patients show poor adherence to the treatment regimens because it demands changes in their behaviours. Kohler and Baaghdadi-Sabeti (2011) have observed that lack of adherence to the recommendations of the health care provider significantly increases the financial cost, morbidity, and increased mortality rates. Despite these risks, it is surprising that almost 50 percent of the patients with chronic diseases do not adhere to the treatment regimens (Sabate, 2003).

It is important for a health psychologist to understand factors involved in non-adherence behaviours and make use of appropriate theoretical framework that helps to predict these factors and develop interventions (Wallace et al., 2014). To develop appropriate interventions for enhancing adherence in chronically ill patients, knowledge on relevant theories is essential (Brandes & Mullan, 2014). There are primarily two theories—theory of planned behaviour and health belief model—taken into consideration for developing the intervention strategies.

Theory of planned behaviour is primarily used to predict adherence behaviours in patients with chronic illness (Ajzen, 1991). This theory is widely applied and proved to be effective in predicting different behaviours including physical activity, dietary behaviours, and health screening behaviours (Hagger & Chatzisarantis, 2009; McEachan et al., 2011). Applying the theory of planned behaviour has also enhanced our understanding of adherence to exercise (Courneya et al., 2008), dietary patterns (Kor & Mullan, 2011), and medication in different health conditions, like urinary tract infections and chronic illnesses like human immunodeficiency virus (HIV) (Vissman et al., 2013).

Health belief model is one of the influential models in promoting health behaviours. The central theme of health belief model is that it addresses a person's perceptions about the risk of health problem and accompanied appraisal of recommended behaviour for managing or preventing the problem. Application of this model has yielded highly successful results in the form of promoting behaviours, like usage of seat belt, medical compliance, and health screening.

Originally, this model has been developed to explain the increased rates of failure of participation in programmes that prevent or detect disease (Hochbaum, 1958; Rosenstock, 1974). Initially the health belief model has four key concepts—perceived susceptibility, perceived severity, perceived benefits, and perceived barriers. Subsequently, the concept of 'cues for action' has been added to stimulate behaviour and 'self-efficacy' has been added to address the challenges of habitual unhealthy behaviours, such as overeating and smoking. Eventually, the model has been extended to apply the individual responses to symptoms and their behaviours in response to diagnosed illness, specifically adherence to medical regimen. It has been found that health beliefs and adherence are significantly correlated (Hur, 2012). The core construct of this model can be applied to examine non-adherence behaviours related to primary hypertension information.

Adherence is a complex and dynamic process. Partial or total adherence to the treatment is observed among patients depending on the timing and circumstances. Lack of adherence results in morbid-mortality, complications, hospital admissions, increased health costs, and dissatisfaction of user and health professionals (Pisano & Gonzalez, 2013). Some of the beliefs, like fear of side effects, addiction to medication, or dependent on medication are the most popular reasons for many patients to fear anti-hypertensive medications. Chances of side effects from antihypertensive medications are very rare and

not serious in nature. Moreover, lack of adherence to the medication can have devastating consequences like damaging of organs. These myths are because of the lack of proper knowledge on the illness (Wang et al., 2015). Research findings suggest that adherence to medication and diet are the prominent factors which can manage primary hypertension effectively. Out of several correlates of adherence—age, gender, occupation, family history of hypertension, and co-morbid illness—psychological distress and positive health resource are found to play a prominent role.

Psychological distress

Psychological distress refers to unpleasant feelings or negative emotions that affect a person's level of functioning in daily life. Psychological distress is subjective in nature and may be termed as psychological discomfort. Its severity depends on the specific situation and perception of the person who experiences it. The diagnosis of primary hypertension often brings psychological distress in the individual's life, primarily in the form of anxiety and depression.

Anxiety

Anxiety refers to "an apprehensive anticipation of future danger or misfortune accompanied by a feeling of dysphoria or somatic symptoms of tension" (American Psychiatric Association [ApA], 2000). It may also be defined as an emotional state depicted by unpleasant inner turmoil and is often associated with nervous behaviour, somatic complaints, and rumination (Seligman, Walker, & Rosenhan, 2001). It is a subjective fear about anticipated events like a feeling of forthcoming death (Davison & Gerald, 2008). However, anxiety is different from fear. Fear is defined as a response to perceived or real immediate threat, whereas anxiety is an expectation of future threat (ApA, 2013). A person with anxiety shows symptoms, such as uneasiness and worry that are generalised, unfocused, and appear to be an overreaction to a situation that is only

subjectively seen as menacing. The physiological signs shown while experiencing anxiety state are muscular tension, restlessness, and fatigue, whereas the behavioural signs include problems in attention and concentration. Individuals in anxiety state try to avoid or withdraw from the situations that act as triggering events from the past (Barker, Pandurangi, & Best, 2003). Although anxiety is often characterised as a negative state to a certain level, it can be considered appropriate in the certain situation. Regarding duration, anxiety may be either long-term (trait anxiety) or short-term (state anxiety). In the present study, anxiety has been conceptualised as a subjective negative state laden with expectations of a future risk, threat, and negative consequences of primary hypertension. Anxiety and adherence are observed to have a positive correlation in persons with primary hypertension. Persistent feeling of anxiety in higher form is however, likely to worsen the disease condition.

Evidence shows that persons who experience frequent and strong negative emotions, such as fear, anxiety, anger, and rage, are susceptible to coronary heart disease and also other significant health problems (DiGiuseppe & Tafrate, 2007). Investigators opine that persistent emotional arousal can affect the secretion of stress hormones—epinephrine (adrenaline) and norepinephrine (non-adrenaline)—which in turn harms the cardiovascular system (Melani, 2001). The release of these hormones is accompanied by experiencing strong negative emotions, like anger, anxiety, and fear. Biologically, these hormones increase heart rate, raise BP, and accelerate the strength of heart contractions that cause a higher burden on both the heart and circulatory system. Therefore, the repeated experience of anxiety due to illness needs to be handled carefully.

Depression

Depression refers to “a state of low mood and aversion to activity that can affect a person’s thoughts, behaviour, feelings, and sense of well-being” (ApA, 2013).

Individuals generally experience various negative feelings, such as disappointments, sadness, and loneliness that are natural responses to the difficult life situations—breaking up friendship or relationship, the death of loved one, trauma, and adversities. People mostly try to cope with these feelings by acknowledging them and sharing them with the closed ones. Nevertheless, when these feelings become intense, overwhelming, and persistent, they affect the functioning in daily life (e.g. sleeping and eating) and make it difficult to live a normal life.

The diagnosis of primary hypertension and the associated peril make the person vulnerable to depression. If not addressed properly, there is a likelihood that the severity may increase and gradually the condition may lead to clinical depression characterised by sadness, loss of interest and pleasure in all most all activities, and exaggerated feelings of self-blame, guilt, worthlessness, helplessness, and hopelessness. This can be overwhelming and pervasive, and affect many areas of a person's life. Behavioural symptoms include a decrease in the ability to concentrate or focus even on the things they could do before, difficulty in making rational decisions, difficulty in maintaining healthy conjugal life, finding difficulty in going out and complete the everyday tasks and activities, and engaging in alcohol abuse and drug addictions. In several instances, persons with clinical depression isolate themselves from friends, family, and significant others and choose an option to end their lives to escape from these overwhelmingly pervasive feelings. In addition to the above emotional and behavioural symptoms, there are also physical symptoms of clinical depression, such as feeling persistently lethargic, tired and fatigue even after a full night sleep, changes in sleeping patterns and habits, changes in weight, gastrointestinal difficulties, and persistent headaches. Because of these symptoms of depression, the persons are dragged to inertia resulting in low or non-

adherence to the treatment regimen and the person is gradually found to be engaged in health risk behaviours.

Positive health resource

'Positive health' is a recent concept popularised by Seligman (2008). While explaining positive health, Seligman (2008) emphasises on the understanding that "people desire well-being in its own right and they desire it above and beyond the relief of their suffering". Thus, positive health focuses on fostering 'health assets', rather than concentrating on the diagnosis, treatment, and prevention of disease. As several research projects have been initiated, it is conceptualised that these health assets foster longer, healthy and happy life, lower disease risk, and reduce health care costs.

In the present study, these health assets are termed as 'positive health resource'. Here positive health resource refers to the positive aspects (Positive psychology constructs) to which people have recourse in difficulty due to suffering from chronic illness in life. Positive health resource is explained from two perspectives—one is about future (hope and optimism) and other about self (self-efficacy). Research findings have indicated that factors, like optimism, positive emotions, and hope are associated with superior cardiovascular outcomes (Denollet et al., 2008). The present study encompasses three positive aspects—hope, optimism, and self-efficacy—under the purview of positive health resource.

Hope

Hope is one of the ten positive emotions discussed meticulously in Positive Psychology (Fredrickson, Mancuso, Branigan, & Tugade, 2000). Fredrickson (2000) has recommended an undoing hypothesis related to positive emotion, where she has described the novel relationships between cardiovascular activity and positive emotion. Positive emotion does not generate cardiovascular reactivity, but it quells any existing

cardiovascular reactivity caused by negative emotion. While experiencing a positive emotion, an individual cannot be plagued by negative emotions, such as sadness, anger, and anxiety. Positive emotion not only produces optimal functioning for the present moment but also helps to linger the same over a long period. Positive emotion creates a supportive aid in the coping processes. Positive emotion is observed as prospectively associated with better health-enhancing behaviours, such as regular exercise, better diet, and improved quality of sleep. Moreover, it is also observed that positive emotion directly positively affects health via behavioural, physiological, and stressor exposure pathways.

According to Fredrickson, "hope arises in dire circumstances in which people fear the worst yet yearn for the best". In terms of positive emotion, hope is understood as a faith and the capacity of thinking of expecting best from worst. Hope enables an individual to know that current problems can be solved and will change according to time. Hope generates an urge in an individual to draw on his or her capabilities and inventiveness to change a thing in a better way.

According to the *theory of hope* (Snyder, 1994), hope is a reflection of individual's perception about their abilities to promptly conceptualise goals, develop specific approaches to attain those goals (pathways thinking), further to initiate and sustain the motivation while implementing those approaches (agency thinking). Both the pathways thinking and agency thinking are essential components. Nevertheless none of them is individually adequate to sustain pursuit towards the goal. Thus, pathways thinking and agency thinking are positively associated, reciprocal, and complementing in nature, but not identical (Snyder, 2002). Hope theory defines goal as something that a person desires to create, experience, or become. In this sense, goal can be a constant pursuit of life.

To understand the nature of hope, the cognitive and motivational model of hope theory has been introduced (Snyder et al., 1994). Hope can be considered as malleable and can act as an important factor for changing pathways. Similarly, change which is beneficial in nature can lead to more hope for achieving the goals which in turn creates a good life. Because of its positive outcome, hope is one of the essential constructs to be emphasised in health care. Findings show that hope is one of the most significant predictors of better adherence in chronic diseases (Maikranz et al., 2007). Hope also helps to engage the individual in maintaining healthy behaviours (Nsamenang & Hirsch, 2015). Hope is considered to be instrumental in building primarily two durable resources—optimism and resilience. In this study, dispositional optimism has been taken into consideration as an aspect of positive health resource.

Optimism

Dispositional optimism refers to an expectation for a positive future (Scheier & Carver, 2003; Scheier et al., 1994) that affects how a person approaches and copes with challenges. Studies have shown that when optimists face with adversity, they often use adaptive problem-focused and emotion-focused coping styles (e.g., humour and positive reframing) than pessimists (Scheier et al., 1994). Optimism is considered as a relatively enduring personality trait associated with positive expectations regarding future events. On the contrary, pessimists perceive defeat as cause of their acts and believe that particular state lasts long in temporal dimension. Thus, explanation of positive or negative events of individuals to themselves determines whether they are optimistic or pessimistic. A pessimist dwells on the most catastrophic causes for the event, whereas an optimist can see other possible and less catastrophic causes for the same event.

To understand the goal-directed behaviour related to optimism, the *expectancy-value model* is one of the best models to be discussed here. As per expectancy-value

model, behaviour is aimed at reaching desired goals (Carver & Scheier, 1998). Goals are considered as actions or end states and viewed as desirable or undesirable. Persons try to mould their behaviour based on what they think is desirable goal, whereas they avoid behaviours that can lead to end states which are undesirable. According to this model, to make an action valued, goal desirability by a person is required. The other core concept is expectancies—a sense of confidence or doubt about accomplishing the goal. An action is not taken if a person is not confident about that action. In other words, if a person is confident, he or she makes a goal-directed effort. These ideas are applied to optimism and pessimism in addition to specific values and focused confidence (Scheier, Carver, & Bridges, 2001). Moreover, in the former case, sense of confidence versus doubt is a border in its focus. The differences observed in domains like actions related to health risk behaviours, taking precautions in risky circumstances, and overcoming health threats by trying persistently are results of an individual's belief system (optimistic or pessimistic) that holds about achieving goal states. These differences can also result in different coping responses that an individual deploys while confronting a threat (Carver & Scheier, 1998; Stanton & Snider, 1993).

Research suggests, "Optimists approach challenges with confidence and persistence, whereas pessimists are more likely to be doubtful and reluctant" (Carver, Lehman, & Antoni, 2003). Dispositional optimism plays an important role in determining how a person might tackle health-related issues. In summary, Seligman (1998) has stated three dimensions based on the way an individual explains events—permanent vs. temporary, universal vs. specific, and internal vs. external. These dimensions, being optimist or pessimist, are associated with adherence to healthy behaviours—individuals who are optimistic are associated with better adherence to healthy behaviours with or without known heart disease (Kelloniemi, Ek, & Laitinen, 2005; Steptoe, Dockray, &

Wardle, 2009). Furthermore, optimists are more likely to follow a healthy heart diet (Schnohr, Kristensen, Prescott, & Scharling, 2005; Steptoe, Dockray, & Wardle, 2009).

In addition to the behavioural responses, individuals also experience emotions in confronting adversity. Individuals elicit feelings like distress and challenge when confronted with severe adversity. The optimists and pessimists differ in balancing these feelings. Optimists experience more positive feelings given that they expect good outcomes, whereas pessimists in general experience negative feelings like anxiety, sadness, and despair due to their expectations of bad outcomes. These differences in emotional responses are also important in adherence to treatment regimen in case of primary hypertension.

Self-efficacy

Self-efficacy, according to Bandura (1997), refers to "people's beliefs about their capabilities to produce desired effects by their actions". *Social cognitive theory*—an approach for understanding action, cognition, emotion, and motivation—explains the concept of self-efficacy in a better way. This theory assumes that individuals are actively involved in changing environment rather than passive reactors (Bandura, 1997; Barone, Maddux, & Snyder, 1997). Self-efficacy here focuses on beliefs of persons with primary hypertension about their abilities to achieve and sustain adherence by their own actions.

Self-efficacy plays a major role not only in tackling with different psychological problems, but also designing effective interventions to address these problems. Individuals with depression often show low self-efficacy expectancies (Bandura, 1997; Maddux & Meier, 1995). Depressed individuals often stay in a belief state that they are less capable than others who effectively function in many important areas of life. Low level of self-efficacy in managing threating situations can lead to dysfunctional anxiety and avoidant behaviour (Bandura, 1997). People with high confidence manage

potentially difficult situations by approaching it calmly and are not easily affected by difficulties. In contrast, individuals with low confidence in their abilities are most likely to approach difficult situations with apprehension allowing themselves to perform ineffectively.

Self-efficacy is observed as a key component in major theories that explain health behaviour, e.g. *health belief model* (Strecher, Champion, & Rosenstock, 1997), *protection motivation theory* (Maddux & Rogers, 1983; Rogers & Prentice-Dunn, 1997), and *theory of reasoned action/planned behaviour* (Fishbein & Ajzen, 1975). Furthermore, it is observed that when self-efficacy is improved, individuals successfully change and maintain behaviours that are crucial for health. These behaviours include improvement in physical activity, diet, stress management, cessation of smoking, adherence to treatment and prevention regimens, and involvement in self-examinations referring to disease detection behaviours. Self-efficacy also affects health through influencing various biological processes that in turn, impact health and disease. Indeed, self-efficacy is also found to change physiological response to stress including immune system, whereas lack of perceived control on environmental demands make the persons more vulnerable to infections and acceleration of disease progression (Bandura, 1977).

Research conducted on self-efficacy has contributed to our knowledge about how and why individuals adopt certain types of health behaviours (healthy or unhealthy), and how can we possibly change these behaviours to improve their health (Bandura, 1997). Self-efficacy affects health in two ways—(i) influencing adaptation to healthy behaviours and cessation of unhealthy behaviours, and (ii) maintenance of healthy behavioural changes even during difficult and challenging situations.

Rationale and purpose statement

It is evident from the review of literature that the contemporary lifestyle increases the susceptibility of the person to chronic illness, specifically primary hypertension. The exclusive and high dependency on only biomedical approach creates hindrances for the holistic health of a person. In addition to medicine, psychosocial factors play a pivotal role in managing primary hypertension and enhancing health and well-being. As adherence is an essential component in managing primary hypertension, it is essential to identify the major variables that predict or determine adherence in persons with primary hypertension. The review has also shown that there is dearth of studies based on the mixed-method design in India on persons with primary hypertension, their positive living, and associated condition. There is considerably less research work carried out emphasising the role of positive psychological constructs on adherence in persons with primary hypertension. It is also observed that there is a lack of appropriate intervention to foster positive living in persons with primary hypertension.

Nevertheless, the present study addresses some of these deficits and adds new dimensions to the current zeitgeist of research in the field of Health Psychology in India. This study has attempted to identify the major determinants of adherence and develop a conceptual model integrating appropriate intervention modules to enhance adherence and foster positive living in persons with primary hypertension.

CHAPTER II

REVIEW OF LITERATURE

This chapter focuses on recent review of literature comprehensively in the form of analysing the findings related to the major constructs in the study and their relevance in the lives of persons with hypertension. It includes the research studies predominantly from 2005 to 2016 from the various refereed and peer reviewed journals in the field of Psychology published by publishers, like Taylor and Francis, Springer, American Psychological Association, Sage, and Routledge. In addition to these, journals indexed in electronic databases, such as PubMed, IndMED, Jstore, PsycINFO, PsycARTICLES, SCOPUS, ScienceDirect, and Indian Psychological Abstracts & Reviews are also referred.

Hypertension: A most prevalent cardiovascular disease

Hypertension is a prominent cardiovascular risk factor and significantly contributes to cardiovascular deaths (Gaziano, Reddy, Paccaud, Horton, & Chaturvedi, 2006). It is one of the most prevalent chronic illnesses across the world (WHO, 2014) and also in India (National Family Health Survey-4, 2016). Prevalence of hypertension is almost same in rural India, if we compare with urban India and high income countries (Bansal et al., 2012). Hypertension cannot be seen in isolation from the lens of biomedical model, but it should be seen from biopsychosocial model (Brownley, Hurwitz, & Schneiderman, 2013). Biologically several factors contribute to the development of hypertension; but psychological factors, such as stress, negative emotions, depression, and anxiety (Howell, Rice, Carmon, & Hauber, 2007), hostility (Davydov, Stewart, Ritchie, & Chaudieu, 2012), personality type A and type D (Brydon et al., 2010; Einvik et al., 2011), neuroticism (Chachaj et al., 2009), and health risk behaviours—physical inactivity, poor diet control, smoking, and excessive alcohol

consumption (Bauer, Briss, Goodman, & Bowman, 2014; Noble, Paul, Turon, & Oldmeadow, 2015) contribute to the development of hypertension, and also worsen the condition of hypertension to develop cardiovascular diseases (Davydov et al., 2012).

Hypertension is a vital and prevalent asymptomatic chronic disease, which needs adherence to the prescribed medication to decrease the risks of renal disease, cardiovascular disease, and stroke (Calhoun et al., 2014). Though medication is one of the essential components in adherence, other components—diet (Epstein et al., 2012; Kiblasan, Payagen, Dulnuan, Singson, & Uy, 2015), exercise (Jennings, 2009; US Department of Health and Human Services, 2006), and self-monitoring (Breaux-Shropshire, Brown, Pryor, & Maples, 2012)—also play pivotal role in managing hypertension. For prevention and treatment of hypertension, guidelines for health behaviour management include physical exercise, weight management, dietary recommendations, excessive alcohol consumption, sodium intake, and stress management (Dasgupta et al., 2014). Research findings suggest that patient's non-adherence can be a pervasive threat to health and well-being and carry an appreciable economic burden as well. Findings also show that more than 40 percent of patients are found to be at risk because of the lack of knowledge about the disease and poor doctor–patient communication that leads to misunderstanding, forgetting, or ignoring healthcare advice (Martin, Williams, Haskard, & DiMatte, 2005).

Correlates of primary hypertension

Lifestyle plays an important role in developing chronic diseases like hypertension (Dickinson et al., 2006). The guidelines suggested to the hypertensive patients to manage hypertension in the direction of a healthy lifestyle includes reducing excessive weight (or weight management), restricting alcohol and salt intake, reducing smoking and incorporating regular physical activity into daily life (James et al., 2014).

Researchers have established a strong association between cigarette smoking and an increase in BP (Sathish, Kannan, Sarma, Razum, & Thankappan, 2012). Cigarette smoking causes acute BP elevation. Studies found that the incidence of hypertension has been reported to be higher among those who smoke 15 or more cigarettes per day (Bowman, Gaziano, Buring, & Sesso, 2007). A study conducted by Messner and Bernhard (2014) found that for one cigarette smoking, the BP increases rapidly. The pressure added due to smoking may be missed if BP is measured 30 minutes after the last smoke. From a study conducted in Andhra Pradesh of India, a contrasting association between BP and smoking was found on male smokers and also the prevalence of hypertension is high among female smokers than male non-smokers (Kusuma, Babu, & Naidu, 2012). In a study of smokers in the Chinese population, researchers have observed that increase in diastolic BP and prevalence of diastolic hypertension is associated with heavy smoking, but was not associated with the changes in systolic BP (Dong-Qing, Chang-Quan, Yan-Ling, Bi-Rong, & Qing-Xiu, 2014).

Excessive alcohol consumption beyond the prescribed amount also contributes to hypertension and leads to developing cardiovascular diseases (Husain, Ansari, & Ferder, 2014). Recent studies have established that chronic consumption of alcohol of 30 grams or more than three drinks per day) is related to an increased incidence of hypertension and also increased the risk of cardiovascular diseases (Beilin & Puddey, 2006; Skliros et al., 2012). On an average, 5 to 10mmHg increase in the magnitude of BP is found in heavy drinkers. A study by Suwarna (2012) on Indian population found that alcohol consumption was significantly associated with hypertension. Alcoholics had 21 times higher risk of hypertension in comparison to the non-alcoholics.

Adherence is a pivotal component in managing primary hypertension. It has four domains—medication, diet, exercise, and self-monitoring. Adherence to

antihypertensive medication is very important to manage hypertension. Adherence to antihypertensive medication has been associated with controlled BP, decreased hospitalisation rates, and lower medical care costs (Mancia et al., 2007; Rasmussen, Chong, & Alter, 2007). Adherence to prescribed antihypertensive medication by a doctor is complex, but is a major factor to maintain healthy BP, and reduces adversities of cardiovascular outcomes (Rajpura, & Nayak, 2014). According to the findings of Gupta et al. (2008), adherence was observed only in 18.3 percent of Indians with primary hypertension. Nevertheless, adherence to medication is strongly related to person's knowledge on hypertension (Karaeren et al., 2009). Understanding the aetiology of hypertension is directly related to increasing in adherence rates. Taking medicines ritually as prescribed by a doctor is not associated with better adherence than, patients knowing the causes for disease and also knowing the reason for using particular antihypertensive medicine (Brown, Bartholomew, & Naik, 2007). The information given about the possible complications of hypertension is expected to cause state anxiety that in turn results in developing a congruency with trait anxiety in patients with hypertension. Trait anxiety leads to behavioural change by increased motivation for adhering to medication. Patients with hypertension are mostly worried and focus on short-term issues like side effects to drugs and symptoms than long-term complications. In a study conducted by Svensson, Linell, and Kjellgren (2008), it is found that patients' non-adherence behaviour is associated with side effects or symptoms attributed to medication. Hypertensive patients also have a myth that hypertension is an intermittent disease; hence they seek for medication and treatment only when they have symptoms and external stress.

Diet is an important aspect in maintaining healthy BP. To prevent cardiovascular diseases and decrease systolic and diastolic BP, Dietary Approach to Stop Hypertension

(DASH) is an effective nutritional strategy that is advised and should be adopted by hypertensive patients (Mokhtari et al., 2015; Niknam et al., 2015). According to the National Institute of Health (NIH; 2006), "the DASH diet emphasises fruits, vegetables, low-fat dairy products, dietary and soluble fibre, whole grains and protein from plant sources, and foods that are reduced in saturated fat and cholesterol". Findings state that combination of low sodium diet and DASH diet have a better impact on BP (Saneei, Salehi-Abargouei, Esmaillzadeh, & Azadbakht, 2014). Sodium intake in any form of diet is a crucial element in managing hypertension. Sodium is a vital nutrient that maintains homoeostasis in cell and to regulate blood volume (NIH, 2013). Several studies across the disciplines have established a causal relationship between the increase in BP, further developing cardiovascular diseases, and sodium intake in the diet (Cook et al., 2007). Hypertension knowledge is associated with adherence to DASH (Uzun et al., 2009). Healthy lifestyle, such as eating vegetables every day, consuming less than 50g of alcohol per week, absence of smoking, moderate to intense physical activity (at least 3 times a week), and maintaining a normal weight (BMI < 25kg / m^2) (Cohen & Alderman, 2007) has a significant effect on avoiding experience of chronic disease. DASH is closely associated with behavioural factors (diet, physical activity, smoking, and alcohol abuse) and motivates and enables persons with hypertension to adhere to medication (Popkin, 2006).

The risk of hypertension has been found to be higher in physically inactive persons in comparison to those who are physically active (Aljadhey, 2012). Research has also indicated that risk of developing hypertension relatively decreases in persons who are physically active than those who are found to be physically inactive (Myers et al., 2015; Reiner, Niermann, Jekauc, & Woll, 2013). In the guidelines for treatment of hypertension framed by the JNC, it has been recommended that all patients with

hypertension should engage in physical activity for at least 30 minutes a day (Dennison-Himmelfarb et al., 2013). Research also suggests that physical activity reduces the effects of diseases including hypertension (Halloway, Wilbur, Schoeny, Semanik, & Marquez, 2016). Psychosocial factors also play a major role in accomplishing a physical task, such as workouts or exercise. Physical exercise is an important factor of adherence that helps in managing hypertension. The factors that hinder the physical activity include lack of training, interest, motivation, resources (time, money, and structure), and knowledge on health benefits of physical exercise and the consequences of sedentary lifestyle (Guedes, Lopes, Cavalcante, & Araujo, 2013). Studies conducted by the Nurses' Health Study II, Aerobics Center Longitudinal Study, and Coronary Artery Risk Development in Young Adults have identified that self-reported physical activity is negatively associated with the development of hypertension (Forman, Stampfer, & Curhan, 2009). Cornelissen and Smart (2013) have found that aerobic exercise training has reduced 4.33mmHg of systolic BP and 1.7mmHg of diastolic BP among pre-hypertensive persons. Another study conducted by Cornelissen, Buys, and Smart (2013) found that the effect of aerobic exercise training was on net reduction of diastolic BP of 1.1mmHg among normotensive people. Similarly, another study conducted to identify the effect of aerobic exercise on hypertension suggested that statistically aerobic exercise contributed a net reduction of 5.3mmHg of systolic BP and 3.7mmHg of diastolic BP (Huang et al. 2013). Interventions on physical activity designed for better cardiovascular health have an almost similar impact with walking based interventions in which the daily steps were the criteria. Around 10,000 steps per day accumulatively had a similar impact with physical activities designed for cardiovascular disease. Walking as a physical activity in which accumulation of steps in a day is found to be beneficial in reducing the levels of BP. Along with hypertensive patients, normotensive individuals also showed a net reduction

of systolic BP up to 3.8mmHg and diastolic BP up to 0.3mmHg significantly (Bravata et al., 2007).

Self-monitoring is another key component of adherence. It is also important for the management and prognosis of hypertension (National Institute for Health and Clinical Excellence [NICE], 2006). Nowadays BP monitoring is so easy that people monitor BP and get diagnosed at homes, using the affordable automatic device and expensive ambulatory BP device. Research has suggested that monitoring and management of BP at home are additional efforts for self-monitoring, but not routine solution for BP management (Breaux-Shropshire, Brown, Pryor, & Maples, 2012). Bray, Holder, Mant, and McManus, (2010) finding have also proposed that in management of BP, self-monitoring plays a pivotal role. Self-monitoring enhances the level of awareness of BP fluctuations and facilitates person's involvement in treatment plan. Self-monitoring also acts as a tool to provide information and understand the effectiveness of treatment plan for health care providers (Beachy, Bauman, & Reiter, 2015). Hypertensive patients were found to participate in their health care by using strategy of self-monitoring at home that helped them reducing BP in smaller way, but were very significant for their health (Fahey, Schroeder, & Ebrahim, 2005). Several surveys conducted internationally found that around 70 percent of hypertensives were engaging in self-monitoring of BP (Cuspidi et al., 2005; Logan, Dunai, McIsaac, Irvine, & Tisler, 2008; Viera, Cohen, Mitchell, & Sloane, 2008) in developed countries like UK, but it is not the same with India. Finding suggest that diabetic individuals, who self-monitor blood glucose levels, mostly self-monitor their BP (Baral-Grant, Haque, Nouwen, Greenfield, & McManus, 2011). It is also found out that people visiting primary health care system engage less frequently in self-monitoring of BP in comparison to those attending specialist clinics (Greenfield, Pattison, & Jolly, 2008).

From several studies, it is observed that the patient's adherence to self-medication is higher compared with the other lifestyle recommendations. Findings show that it appears easier for patients to self-medicate than modify lifestyle behaviours. Moreover, the importance of distress in the onset and worsening of primary hypertension has been well depicted (Kulkarni, O'Farrell, Erasi, & Kochar, 2006). For instance, psychological distress, by adversely affecting other faculties like memory, energy, and executive function, is thought to impair self-care in patients with chronic illness (Katon, 2011). It is associated with a decline in health status and quality of life as well as with an increase in morbidity and mortality from somatic diseases (Katon, Lin, & Kroenke, 2007). Psychological distress is also shown to affect adherence (Dempe et al., 2013; Jackson, Clatworthy, Robinson, & Horne, 2010; Santana & Fontenelle, 2011; Gentil et al., 2012). In addition to this, psychological distress also leads to low self-efficacy and feelings of hopelessness and pessimism that create more negative expectations of treatment outcomes (Maeda, Shen, Schwarz, Farrell, & Mallon, 2013).

Several studies found a correlation between anxiety and hypertension (Saboya, Zimmerman, & Bodanese, 2010; Grimsrud, Stein, Seedat, Williams, & Myer, 2009). The intense emotions in the hypertensive patients increase the risk for mental health disorders, like anxiety and depression (DeJean, Giacomini, Vanstone, & Brundisini, 2013; Vetere et al., 2007). It is observed that hypertension patients, who follow the prescribed medical regimen or adhere to pharmacological and non-pharmacological therapies, are less likely to be influenced by the negative emotions than those who do not adhere (Duvdevany, Cohen, Minsker-Valtzer, & Lorber, 2011). Kim and Park (2010) have noticed that patients with an anxiety disorder are found to have a greater level of adherence. Results of a study have found that anxiety is associated with adherence to antihypertensive medication (De Jong, Moser, Chung, & Wu, 2008). A study conducted

by Schweitzer, Head and Dwyer (2007) found that trait anxiety explained variability regarding smoking and alcohol-adherence. Due to the fear of consequences, an anxious heart-failure patient may not consult the doctor. A positive correlation was found between anxiety sensitivity and alcohol consumption (Buckner, Eggleston, & Schmidt, 2006) indicating that there may be a relationship between anxiety and health risk behaviours.

Depression is a recurring concept in patients with chronic diseases. Depression is also common in hypertensive patients and is found to be associated with adverse health outcomes, poor quality of life, and excessive use of healthcare resources (Bogner et al., 2005; Ciechanowski, Katon, & Russo, 2005). A positive relationship has been found between depression and non-adherence to medical therapy, whereas on the contrary, a high number of prescribed medications have been found to be the cause of depressive symptoms in patients with hypertension (Sung, 2011). However, not all studies successfully observed a relationship between depressive symptoms and adherence (Schweitzer, Head, & Dwyer, 2007). Depression among hypertensive patients is usually not diagnosed (Bane, Hughes, & McElnay, 2006). As generally a physician or the patient may not look into the aspect of the mental health issues, and due to this, the patient may be denied the care that takes mental health into consideration. Depression has been linked to low adherence in many chronic illnesses, like diabetes and myocardial infarction. Depression influences the self-management behaviour, and it is the minor depression that is related to poor self-management than the major depression (Holzapfel et al., 2009). Depression and anxiety both play a major role in adherence; but it is depression that is associated with non-compliance, whereas anxiety is sometimes associated with increased adherence (Bender, 2006; Gonzalez et al., 2008). But the relationship between anxiety and adherence is unclear compared to the relationship between depression and adherence.

Depression interferes with daily life activities, and the depressed persons are more likely to engage in negative health behaviours, such as overeating, smoking, and adopting sedentary lifestyle (Suris, Michaud, Akre, & Sawyer, 2008). Lack of motivation, low energy levels, a sense of helplessness or despondency, and cognitive dysfunctions, like memory and attention dysfunctions are few of the symptoms of the depression that are likely to interfere with the ability to perform self-maintenance recommendations (Morrinon, 2013).

Hypertension patients are required to adhere to pharmacological and non-pharmacological therapies. However, increasing number of studies have reported depression and anxiety to be co-morbid conditions in hypertension patients and that these negative emotional states are associated with a lower quality of life and poor self-care (Wu et al., 2011). These two are found to adversely influence the patients' adherence to self-care (Duvdevany, Cohen, Minsker-Valtzer, & Lorber, 2011). Importantly anxiety and depression can lower the health-related quality of life in patients with chronic diseases (Garcia-Llana, Remor, Peso, & Selgas, 2014). Moreover, depressed patients are observed to be three times more likely to show non-adherence than non-depressed patients (Cukor, Rosenthal, Jindal, Brown, & Kimmel, 2009).

The study has found that trait anger is one of the psychological factors associated with elevation of BP (Howell, Rice, Carmon, & Hauber, 2007). Association of anger with hypertension has been established by researchers (Player, King, Mainous, & Geesey, 2007). According to a study, four types of thinking styles—emotional reasoning, low frustration tolerance, unreasonable expectations, and evaluations of other people—are the factors that lead angry persons to develop hypertension (Gupta, Joshi, Mohan, Reddy, & Yusuf, 2008).

According to the proposition of Positive Psychology, "Psychology should focus more on promoting human happiness and building human strengths and assets, such as the capacity to love and be loved, rather than just repairing negative emotions such as anxiety and depression" (Gable & Haidt, 2005; Seligman et al., 2005; Baumeister & Simonton, 2005). Positive psychological factors are found to lower the BP and increase the adherence of persons with hypertension. The lived experiences of the persons with cardiovascular disease have been explored by Vincent, Rana, and Nandinee (2014) and the findings have revealed certain strategies that persons with cardiovascular disease follow to salvage their lives by transforming themselves from negative to positive.

One of the positive psychological and protective factors against cardiovascular diseases is hope. It has received significant attention in the health-care literature and for good reasons. People with high hope tend to select more specific and precise pathways to give themselves the best opportunities to succeed, whereas people with low-hope often have difficulty in selecting pathways, and tend to select pathways that are inadequate for their stated goals (Snyder, 2002). People with high-hope are observed to be more successful at developing alternate pathways to implement when routes to goals are blocked. Conversely, people with low hope have difficulty in constructing alternate routes and often become frustrated and distraught when goal-blockages are present. Hopefulness, measured as a dispositional variable, is found to predict a plethora of positive patient outcomes, including lower incidence of hypertension (Richman et al., 2005), better immune functioning, faster recovery from a number of illnesses, and higher adherence to treatment recommendations (Berg, Rapoff, Snyder, & Belmont, 2007; Lloyd, Cantell, Pacaud, Crawford, & Dewey, 2009). High-hope adults also have reported greater feelings of confidence, overall life-satisfaction, and self-worth (Marques, Lopez, & Pais-Ribeiro, 2011). Hope interventions also have been shown to be effective in terms

of adult psychotherapy outcomes, including therapy for depression, anxiety, posttraumatic stress, alcohol and drug abuse, and Axis II disorders. Hope has demonstrated predictive associations with individuals' responses and coping to a variety of chronic health problems (Cheavens et al., 2006). Berg et al. (2007) found hope as a significant predictor of treatment adherence among asthma patients. Individuals with high hope may be more likely to set adherence goals, make realistic plans to reach those goals, and be more motivated to create another plan when barriers to adherence arise (Nsamenang & Hirsch, 2015). Hope is identified as a significant predictor of adherence within various medical contexts (Maikranz et al., 2007). A Greater level of hopefulness is associated with better overall health, engagement in stroke aftercare (Arnaert et al., 2006), and fewer depressive symptoms (Visser et al., 2013).

Optimism and other positive psychological constructs have been reported to be consistently associated with higher adherence to health behaviours, including a healthy diet, physical activity, and smoking cessation (DuBois et al., 2015). These are found to develop a positive attitude toward taking medication (Godin et al., 2005). This could be due to optimism keeps patients involved and engaged in treatment goals, leading to an improved psychological well-being (Carver, 2005). It also appears likely that optimistic patients emphasise on positive aspects of treatment, or benefits, and are more likely to adhere and more likely to follow a healthy diet and less likely to smoke (Giltay et al., 2007; Kelloniemi, Ek, & Laitinen, 2005). Higher optimism is associated with improved health behaviours, like medication, physical activity, adherence, and adopting a heart-healthy diet (Boehm & Kubzansky, 2012; Giltay, Geleijnse, Zitman, Buijsse, & Kromhout, 2007; Steptoe, Dockray, & Wardle, 2009). Research findings state that optimism is significantly associated with lower mortality and superior cardiovascular outcomes (Rasmussen, Scheier, & Greenhouse, 2009). Among older adults, individuals

with higher levels of optimism and positive health beliefs report higher rates of physical activity (Giltay et al., 2007; Steptoe et al., 2006; Browning et al., 2009). The study found high optimism lowered risk of cardiovascular disease death (Giltay, Kamphuis, Kalmijn, Zitman, & Kromhout, 2006). Similarly, a positive correlation was observed between high levels of optimism and increased protection against cardiovascular events (Carver, Scheier, & Segerstrom, 2010).

Further, optimism may promote health behaviours via active coping (Carver et al., 2010). The expectancy-value theory posits that the adherence of optimist to treatment recommendations is due to the valuing of their expectations about treatment outcomes, and this motivates them towards pursuing treatment goals. Further, optimism is associated with healthier baseline diet and superior dietary adherence. Research shows that younger Finnish adults with greater optimism have consumed a greater quantity of fruits, vegetables, and high-fiber foods, and a smaller quantity of alcohol, coffee, and candy (Kelloniemi, Ek, & Laitinen, 2005). A 15-year longitudinal study conducted by Zutphen on elders found that dispositional optimism was linked to a greater likelihood of healthy dietary changes, greater consumption of fruits, vegetables, and whole grain bread (Giltay et al. 2007).

An important factor essential to cardiac health, i.e. physical activity, has been reported to be higher among older adults with greater optimism (Giltay et al., 2007; Browning, Sims, Kendig, & Teshuva, 2009). Substantial evidence related to the above observation has been reported in a study conducted by Steptoe, Wright, and Kunz-Ebrecht (2006). They reported that older adults with dispositional optimism were involved in brisk walking and vigorous physical activity, independent of multiple relevant covariates, such as age, chronic illnesses, medication count, socioeconomic status, and body mass index. In general, it was observed that optimism might influence

adherence to a recommended exercise routine (Browning, Sims, Kendig, & Teshuva, 2009).

It has been consistently reported that high optimism influences the individual's choice to smoke. A study conducted by Steptoe, Wright, and Kunz-Ebrecht (2006) on older adults found that apart from being independently linked with physical activity, dispositional optimism was also independently associated with lower rates of smoking. Another relevant study conducted on Finnish population reported that the proportion of current smokers was lower among optimistic men and women, and individuals with greater optimism were likely to be categorised as having no lifetime smoking history (Kelloniemi, Ek, & Laitinen, 2005).

In a study by Haushofer and Fehr (2014), it is found that increased levels of happiness decrease the levels of cortisol—a key stress hormone related to hypertension. A study by Steptoe and Wardle (2005) offers some evidence that BP is inversely related to reported happiness. Positive affect is found to promote health behaviours like self-regulation against smoking (Shmueli & Prochaska, 2012), whereas negative affect is associated with poor health information processing (Beckjord et al., 2008).

Self-efficacy was found to mediate the adherence to treatment among individuals with symptoms of anxiety and depression (Schoenthaler et al., 2009). Patients with low self-efficacy are less likely to follow treatment regimen and are more likely to optimise the severity of obstacles to treatment adherence resulting in inefficacious thinking, impaired level of functioning, and low treatment adherence. A study by Siegel, Lopez, and Meier (2007) found that hypertension self-efficacy was strongly associated with adherence to five self-care behaviours recommended by JNC on Prevention, Detection, Evaluation, and Treatment of High BP. To this end, it appears that the measurement of self-efficacy in the domain of self-care behaviours among hypertension patients would

be crucial for controlling hypertension at the individual or population level. Self-efficacy has been associated with several self-care behaviours, such as engaging in physical exercise (Lee et al., 2008), eating a healthy diet (Mishali, Omer, & Heymann, 2011), and adherence to medication (Wang, Chair, Thompson, & Twinn, 2009). Studies conducted by Munger et al. (2007) reported evidence for the argument that self-efficacy had a positive effect on adherence to medication. The lack of trust on the health care provider can impair the patient's adherence to medication, health-related behaviours, and self-efficacy (Cooper et al., 2005). In patients with hypertension, self-efficacy has been associated with self-report and objective measures of adherence to medication regimens (Schoenthaler, Ogedegbe, & Allegrante, 2009) as well as participation in physical activity (Martin et al., 2007). Self-efficacy has been demonstrated to be a predictor of participation in other healthy behaviours such as following a recommended diet (Pawlak & Colby, 2009) and weight loss. Moreover it has been reported that individuals with high self-efficacy are more likely to exhibit adherence to medication regimens, using low-salt diet techniques, engaging in physical activity, abstaining from smoking and utilising common weight management strategies (Warren-Findlow, Seymour, & Huber, 2012). It is also found that self-efficacy influences patient's ability and skills to continue treatment (Schoenthaler, Ogedegbe, & Allegrante, 2009; Schofield, Saka, & Ashworth, 2011).

Other important variables

Besides the above-mentioned variables, several other variables—locus of control, personality traits, and doctor–patient communication—are also found to play a role in adherence in persons with primary hypertension. Characteristics of locus of control of the patients influence their adherence to treatment regimen. As a consequence, individuals with an internal locus of control report more adherence to their treatment regimen than individuals with an external locus of control (Omeje & Nebo, 2011).

Patients with internal locus of control seek information, perceive themselves as responsible for maintenance or improvement of their physical health, know more about conditions that cause poor health, and are more likely to take steps to improve or maintain their health, engage in health-protective behaviours, stop smoking, and lose excess weight (Balch, 2006). Studies conducted by Combes and Feral (2011), and Omeje and Nebo (2011) have observed that non-adherence patient sample has better explained the presence of characteristics associated with low internal locus of control and high external locus of control 'others' implying that patients with low internal locus of control are less likely to take full responsibility for their illness and health behaviours. Consequently, patients with high external locus of control are more likely to attribute their health actions to external forces instead of taking personal responsibility. Few studies reported gender differences in possessing locus of control characteristics with female patients being less likely to possess internal locus of control than male patients (Holland, Geraghty, & Shah, 2010) while contrasting findings have been found in few other studies (Hamedoglu, Kantor, & Gulay, 2012; Saricam, Duran, Cardak, & Halmatov, 2012). Research findings suggest that people with powerful another health locus of control have reported better adherence to treatment regimens (Zahednezhad, Poursharifi, & Babapour, 2012), and people with chance health locus of control have not properly followed their treatment regimen and thus have BP above 140/90. Helmer, Kramer, and Mikolajczyk (2012) reported that individuals with chance health locus of control were heavy smokers. Strong internal health locus of control was associated with more positive adaptation to chronic disease when patient controlled over illness or treatment was realistic (Christensen et al., 2010).

Increasing evidence suggests an influence of personality traits on adherence to medication. In particular personality traits, like neuroticism, agreeableness and

conscientiousness, are forced to influence patient's reported adherence to medication behaviour (Axelsson, Brink, Lundgren, & Lotvall, 2011). Individuals with high conscientiousness are more likely to adopt optimal health behaviours (Lodi-Smith et al., 2010) and are likely to maintain better health. Findings suggest that personality traits, such as extraversion, neuroticism and agreeableness, may influence people's emotional and social life, including sensitivity to negative experiences and lack of social support (Connor-Smith & Flachsbart, 2007).

Conscientiousness has been found to be associated with a broad range of optimal health behaviours and outcomes (Jokela et al., 2013) and with high adherence to prescribed medication (O'Cleirigh, Ironson, Weiss, & Costa, 2007). Specific traits of personality, such as self-discipline, self-control, reliability, and perseverance are found to be consistently related to different kinds of health-related behaviour (Žugelj et al., 2010), and relevant for achieving health-related goals. Individuals high on conscientious make long-term plans and stick to them (Martin et al., 2007) and are more likely to search and adhere to health relevant information (Hill & Roberts, 2011). Finding suggest that neurotic individuals have behaviour that is riskier to their health, such as tending to smoke and adhering inappropriately to disease management suggestions (Bruce, Hancok, Arnett, & Lynch, 2010).

Another personality trait that has received considerable attention in the research related to health behaviour is agreeableness. It has been observed that a non-linear relationship exists between agreeableness and adherence scores (Wheeler, Wagaman, & McCord, 2012) implying that treatment adherence increases with increasing in agreeableness scores, but up to a certain level after which the adherence scores decline for those with high agreeableness score. This could be due to the altruistic disposition of individuals with high agreeableness (Graziano, Habashi, Sheese, & Tobin, 2007) that

makes these individuals to prioritise the needs of others before their own. Individuals who score high on extraversion are prone to physically active lifestyle (Hampson, Goldberg, Vogt, & Dubanoski, 2007). Positive associations have been found between adherence and conscientiousness, agreeableness, and extraversion. Negative associations have been documented between neuroticism and adherence (Lin, Wang, & Cheng, 2007; Saklofske, Austin, Gallowa, & Davidson, 2007).

Doctor–patient communication is another important variable for adherence. The main goal of this communication is to improve patient's well-being and optimise medical care. With optimal adherence, the prognosis is expected to be the best (Swain, 2013). The main aspects of doctor–patient communication include establishing rapport to build a better relationship, creating a path for the discussion between the doctor and the patient, gathering information about the patient's problems and issues, and to mutually decide the plan of action to handle them (Scholl, Zill, Härter, & Dirmaier, 2014).

A plethora of research evidence establishes the fact that effective communication between the doctors and the patients can lead to positive outcomes for patients, for doctors, and others. These outcomes include creating a good interpersonal relationship, exchange of information between the doctor and patient, and facilitation of decision-making process (Ha & Longnecker, 2010). There is an ample evidence linking effective doctor-patient communication to favorable health outcomes such as improved compliance to treatment and improved prognosis (Swain, 2013), lower patient stress levels and higher physician satisfaction (Guadagnino & Branch, 2006).

Recent Indian statistics reveal that with the doctor–patient ratio of 1:1800, (Deo, 2013), India is listed under countries with a critical shortage of health service providers. The average doctor–patient interaction time is progressively becoming shorter across the globe and more so in India (Thomas, Hariharan, Rana, Swain, & Andrew, 2014). This

can be attributed to the disproportionately large number of patients the Indian doctors have to see in a day compared to their counterparts in the western countries. Technology dependence in health care is another crucial factor compelling the doctors to distribute the time between the patients, reports, computers, and other electronic gadgets and diagnostic devices. Groopman's (2007) study found that a patient was given just 18 seconds on average to communicate the symptoms before the physician got interrupted that increased the likelihood of making errors in diagnosis and treatment plans.

Summary

From the review, several biopsychosocial correlates and factors that play pertinent role in chronic illness in general and hypertension in particular have been explored. Out of these, some directly or indirectly contribute to better prognosis of hypertension, whereas others act as hindrance. It is understood that adherence to medication, diet, exercise, and self-monitoring is essential for the management of hypertension. Review has provided certain common as well as crucial correlates of adherence—a behavioural component that plays a pivotal role in management of illness. The variables which are positively correlated primarily include hope, optimism, self-efficacy, and internal locus of control. The variables—anxiety, depression, fear, hostility, and anger—are found to be negatively correlated with adherence. Review has shown limited research in the areas of positive correlates, not only across the world, but also in India. There are considerably less research conducted synthesising the role of positive psychological constructs on health-related issues, particularly adherence. Another observation is that there are very few studies involving mixed-method approach. The process of living of person with primary hypertension particularly has not been explored under the framework of Health Psychology in India. There is also no specific intervention package found to accelerate the positive living of these persons. Therefore, the

investigator has chosen this area to conduct research with the following research questions and objectives.

Research questions

The present study was undertaken to find answers to the following three main research questions.

1. What are the major determinants of adherence among persons with primary hypertension?

2. What are the factors that foster positive living in persons with primary hypertension?

3. Can an appropriate intervention package be conceptualised and recommended to enhance adherence with an aim to foster positive living among persons with primary hypertension?

Objectives

The main objectives of the present study were

1. To identify the major determinants of adherence among persons with primary hypertension,

2. To explore the lived experiences of the persons with primary hypertension for understanding the dynamics of positive living amidst chronic illness, and

3. To conceptualise and recommend an appropriate intervention package to enhance the adherence with an aim to foster positive living among persons with primary hypertension.

CHAPTER III

METHOD

This chapter contains the design and particular methods adopted in the present study. First, the plan and designs of the study are described followed by the pilot study. Second, the participants are described along with the determination of sample size and sampling. Third, the measures used in this study are described with their psychometric properties and scoring procedure followed by the in-depth interview protocol. Finally, the procedures followed in this study are described. This study has been conducted after obtaining the ethical approval from the Institutional Ethics Committee of University of Hyderabad. The Committee has also approved all forms, measures, and procedures of the study.

Plan and design

The study was based on sequential mixed method design (Creswell, 1999). Therefore, it was planned to carry out the study in two phases. The first phase of the study was based on the principles of quantitative research design, whereas the second phase was based on the principles of qualitative research design.

First phase

In the first phase, under the framework of quantitative research, a correlational design was adopted in this study. The criterion variables of the study were adherence and its four domains—medication, diet, exercise, and self-monitoring. The predictor variables of the study were psychological distress (anxiety and depression), positive health resource (hope, optimism, and self-efficacy), and demographic correlates (age, BP, family history, and the presence of co-morbid illness).

Second phase

In the second phase, under the framework of qualitative research, the study adopted the Interpretative Phenomenological Analysis (IPA) for understanding the process and identifying the dynamics of positive living among persons with primary hypertension. IPA studies are conducted with small samples to obtain sufficiently in-depth and nuanced examination of idiographic perspective (Smith et al. 2009). IPA (Smith et al. 1995; Smith et al. 1997; Smith et al. 1999) attempts to analyse how people understand their lived experiences. As a dynamic process, IPA also focuses on the active role of the researcher in analysing the lived experiences. In this study, the investigator tried to understand the participant's personal world—an insider's perspective (Conrad, 1987) using inductive processes of meaning making. The salient principle of IPA—the use of a double hermeneutic interpretation process—was followed. The investigator tried to understand the person's pattern of living and dynamics of positive living, and also examined the underlying meanings (Aresti et al., 2010; Smith, 2011). For IPA small sample (n = 14) was identified from the large sample of the first phase and in-depth interview method was resorted to generating rich qualitative data.

Pilot study

A pilot study was carried out with three main objectives—*first*, to test the efficacy and feasibility of all the measures used in the study; *second*, to examine the feasibility of applying the proposed research design; and *third*, to verify the accessibility and availability of the sample. After meeting these objectives, the main study was conducted.

Participants

Initially, 330 persons with primary hypertension were selected out of which 296 persons were retained as a final sample of the study. Four important factors—nature of the research, sample sizes used in similar studies, resource constraints, and nature of data

analysis—were considered for determining the sample size. The participants were selected using multi-stage sampling.

In the *first stage* of sampling, the place of the study was finalised. Out of 29 States in India having cultural unity in diversity, the State of Andhra Pradesh was included in the universe of the study and one of its city, i.e. Guntur was selected as it was the native place of the investigator. It was also convenient for the investigator regarding accessibility, resources, and adequate support to carry out the research there. In the *second stage*, out of several hospitals and health clinics, one hospital and one health clinic were selected by the permission from the authorities of such units. In the *third stage*, the participants were included in serial order as per their availability on a daily basis by following the inclusion and exclusion criteria mentioned below and their informed consent to participate in the study.

Inclusion criteria. Participant's age was decided to be between 30 to 60 years. It was decided to include participants having diagnosed with primary hypertension for at least six months.

Exclusion criteria. Persons with primary hypertension not willing to sign informed consents, having more than one co-morbid illness, and having psychiatric problems were excluded from the study.

From 330 initially selected participants, 16 participants withdrew their participation from the study due to their time constraints. From the remaining 314 participants, 296 participants were retained finally in the first phase of the study after eliminating multivariate outliers (n = 18) using Mahalanobis distance. The participants ranged in age from 31 to 60 years (M = 46.09 years, SD = 6.33 years). Out of 296 participants, 46.6% were men, and 53.4 % were women. From the total sample, 81.4% participants were married, 4.7% were unmarried, 8.4% were divorcees, and 5.4% were

widow(er)s. All the participants were literates and able to read and write either in English or regional language or both. Among 296 participants of the present study, 31.4% were unemployed, 7.8% were private employees, 31.4% were government employees, and 29.4% were self-employed. Among men, 3.8% were unemployed, 9.5% were private employees, 41.1% were government employees, and 45.6% were self-employed. Among women, 63% were unemployed or housewives, 5.8% were private employees, 20.3% were government employees, and 10.9% were self-employed. The duration of hypertension was ranged between six months to 52 months in the participants. After categorisation, it was observed that hypertension was present for one year in 32.4 %, two years in 49%, and three to five years in 18.6% of participants. In the sample, 42.6% were reported to have a family history of primary hypertension, whereas 57.4% of participants did not have any family history of primary hypertension. It was also observed that 22.6% of participants had a co-morbid illness and 77.4% participants did not have any co-morbid illness. The frequencies and percentages of the participants are mentioned in Table A1 (*Appendix A*).

Basing on the findings of the first phase of the study, 14 participants (equal number of participants from the category of low adherence and high adherence) were selected from 296 by purposive sampling for conducting the in-depth interview in the second phase of this study. The principles of theoretical sampling were followed for IPA on the major criterion of competency of the participants in expressing their lived experiences. Out of the 14 participants, eight were men, and six were women. The age of the participants ranged between 42 years to 59 years. The duration of illness varied between nine months to 48 months. In this sample, only one participant had a co-morbid illness of diabetes. The characteristics of the participants are presented in Table A2 (*Appendix A*).

Measures

The first phase of the study focused on assessment whereas the second phase involved an in-depth interview. In the first phase, there were five measures used along with the demographic details of the participants. The measures and demographic form are appended (*Appendix D*). The measures were Hypertension Compliance Scale, Hospital Anxiety and Depression Scale, Adult Hope Scale, Life Orientation Test–Revised, and Self-efficacy for Managing Chronic Disease 6-Item Scale. The items of the measures were made bilingual—English and the regional language. Standard procedure was followed to translate the original items written in English to the regional language. First, the items were translated into regional language, i.e. Telugu. The translated versions of these measures were then re-translated into English by two experts independently and matched with the original versions to avoid ambiguity. The measures are described below with their psychometric properties and scoring procedure.

Hypertension Compliance Scale

Hypertension Compliance Scale (HYCOMPS; Swain, 2013) was designed to measure adherence of persons with hypertension (*Appendix D: Section A*). It consisted of 15 (both positive and negative) statements related to adherence with the clinical prescription. Each item was measured on a 5-point Likert scale (0 = Do not know/Not applicable, 4 = None of the time). It had four domains, namely Adherence to medication (e.g. How often do you forget to take your medicine for high blood pressure?), Adherence to diet (e.g. How often do you eat salty food?), Adherence to exercise (e.g. How often do you do the prescribed exercises e.g. morning walk?), and Adherence to self-monitoring (e.g. How often do you check blood pressure level?). The validity of the scale was established on Indian sample, and the Cronbach's α was found to be .67 (Swain, 2013).

Scoring. The number of items varied across four domains of HYCOMPS—Adherence to medication (Items 1, 2, 7, 8, 9, 10, and 11), Adherence to diet (Item 3, 4, and 5), Adherence to exercise (Item 13, 14, and 15), and Adherence to self-monitoring (Item 6 and 12). For the dimension of Adherence to medication, the scores ranged from 0 to 28, for both the domains of Adherence to diet and Adherence to exercise, the scores ranged between 0 to12, and as there were two items under the dimension of Adherence to self-monitoring, its scores ranged from 0 to 8. The total scores of adherence ranged from 0 to 60. The items 6, 12, and 13 were scored reversely. Higher the score better was the adherence.

Hospital Anxiety and Depression Scale

Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith 1983) is used to assess the states of vulnerability to depression, anxiety, and psychological distress among patients who are being treated for a variety of clinical problems (*Appendix D: Section B*). It consisted of 14 items. Each item was measured on a 4-point scale with different alternatives. There were two dimensions of this scale—Anxiety (e.g. I get a sort of frightened feeling as if something awful is about to happen), and Depression (e.g. I feel as if I am slowed down) were the two dimensions. The Cronbach's α of Anxiety was varied from .68 to .93, whereas for Depression, it varied from .67 to .90 (Bjelland, Dahl, Haug, & Neckelmann, 2002).

Scoring. There were equal number of items across the two dimensions—Anxiety (Items 1, 3, 5, 7, 9, 11, and 13) and depression (Items 2, 4, 6, 8, 10, 12, and 14). As there were seven items in each dimension, the scores of each dimension varied from 0 to 21. In this study, the scores for Anxiety and Depression were calculated separately by adding the scores of the corresponding items. In case of Anxiety, higher the scores, higher was the level of anxiety. In the similar fashion the level of depression was calculated.

Adult Hope Scale

Adult Hope Scale (Snyder et al., 1994), based on Snyder's cognitive model of hope, measures a respondent's level of hope (*Appendix D: Section C*). The scale consisted of two subscales—Agency thinking (i.e., goal-directed energy) and Pathways thinking (i.e., planning to accomplish goals). It consisted of 12 items. Each item was measured on an 8-point Likert scale (1 = definitely false, 8 = definitely true). Out of the 12 items, four were for Agency subscale (e.g. I energetically pursue goals) and four were for Pathways subscale (e.g. There are lots of ways around any problem). The remaining four items were the filler items. The Cronbach's α for the agency thinking was .66 and pathways thinking was .80 (Yailagh, Ghahfarokhi, Maktabi, Neasi, & Samavi, 2012). The validity of this scale was established, and the scale was used extensively in several studies.

Scoring. There were an equal number of items in both the subscales—Agency (Items 2, 9, 10, and 12) and Pathways (Items 1, 4, 6, and 8). The number filler items were four (Items 3, 5, 7, and 11). In each subscale, the scores ranged from 4–32. The total hope scores varied from 8–64. Higher the scores, higher were the level of hope.

Life Orientation Test-Revised

Life Orientation Test–Revised (LOT–R*;* Scheier et al., 1994) measures dispositional optimism (*Appendix D: Section D*). LOT–R is a one-dimensional scale consisting of 10 items (e.g. In certain times, I usually expect the best). Each item was measured on a 5-point Likert scale (0 = I disagree a lot, 4 = I agree a lot). The Cronbach's α was found to be .72 (Gustems-Carnicer, Calderon, & Maria, 2017). LOT–R was used widely, and its validity was established.

Scoring. Out of the ten items, four items were filler (Items 2, 5, 6, and 8). Three items were negative (Items 3, 7, and 9). The dispositional optimism score was obtained

by adding all the scores of the items after reversing negative items and excluding the filler items. The total score ranged from 0–24. Higher the score higher was the level of optimism.

Self-efficacy for Managing Chronic Disease 6-Item Scale

Self-efficacy for Managing Chronic Disease 6-Item Scale (Lorig et al., 2001) measures the self-efficacy of persons having a chronic illness (*Appendix D: Section E*). It is a one-dimensional scale consisting of 6 items (e.g. How confident are you that can keep the physical discomfort or pain of your disease from interfering with the things you want to do?). Each item was measured on a 10-point Likert scale (1 = Not at all confident, 10 = Totally confident). The Cronbach's α of the scale was .91 (Lorig et al., 2001). The validity was also established.

Scoring. To find out the score of the self-efficacy for managing chronic disease, first, the total score was calculated by adding the scores of all six items and then the mean score was calculated. The mean score varied from 1–10. Higher the mean scores, greater was the level of self-efficacy.

Demographics and other essential parameters

In addition to the measures, a specific form was developed to collect the demographic details and other essential parameters of the study (*Appendix D: Section F*). In this form, participants had to report their personal details, like name, gender, age, marital status, occupation, duration of hypertension, family history of hypertension, co-morbid illness, and most recent systolic and diastolic BP measured by the physician. The reported systolic and diastolic BP were verified by the investigator from the clinical case report of each participant. In addition to these, there was a single item to know whether they were happy in their lives.

In-depth interview guidelines

In the *second phase* of the study, multiple in-depth interview sessions were conducted to obtain the qualitative data. The main aspect of the in-depth interview was to generate rich qualitative data to understand the pattern of living and dynamics of positive living amidst chronic illness. The main focus of the in-depth interview was five-fold—life style, first experience with the illness, the experience of living with the illness, reasons for adherence (high or low), and measures to fight the illness for better living (*Appendix D: Section G*). The detailed procedure followed in conducting an in-depth interview is mentioned below under 'Procedure'.

Procedures

Before conducting the study, the approval of the Institutional Ethics Committee of University of Hyderabad (*Appendix C*) was obtained. Before collecting data, one Super Specialty hospital and one health clinic from Guntur district of Andhra Pradesh were selected by the official permissions received from the authorities of the hospital and health clinic. In addition to the approval of the Institutional Ethics Committee of University of Hyderabad, the approval of the Ethics Committee of the Super Speciality Hospital, Guntur was also obtained in order to complete the required official formalities. The participants were selected through the multi-stage sampling as mentioned under the previous section 'Participants'.

As the study involved sequential mixed method design, two separate procedures were followed to generate both quantitative and qualitative data. In the first phase, there was an individual assessment to obtain quantitative data for the first objective. In the second phase, there was an in-depth interview to generate rich qualitative data for the second objective of the study.

Individual assessment

The selected participants were informed about the purpose of the study, the nature of the items in the measures, and the duration of the assessment. It was informed to the participants that their participation was voluntary. They were also informed that they were free to withdraw at any point in time during the process. The participants were assured that their information provided in any form would be kept confidential. Nevertheless, the Informed Consent (*Appendix C*) was taken from each participant. The investigator established rapport with the selected participants. The individual assessment was done with each participant in a specific enclosure in the hospital. Each of the selected participants was given the booklets containing all the measures under study and a specific form as mentioned above with printed instructions. The assessment was done during the participants' visits to the hospital for their consultation with doctors. For this, arrangements were made by the hospital authorities. Considering the length of the measures, the investigator took one session of assessment per participant. The duration of the session varied from 20–35 minutes. During the assessment, the investigator carefully observed and gave attention to each participant equally. In the case of any doubts raised by the participant, the same was clarified by the investigator. At the end of each assessment, the investigator debriefed the participant. To meet the determined sample size of 330, the investigator took the period of six months for data (quantitative) collection.

In-depth interview

In-depth interview sessions were conducted on 14 participants (seven from the category of low adherence and seven from high adherence) from the participants of the first phase of the study. The selected participants were informed about the purpose of the

in-depth interview, the types of interaction, and the tentative duration of each session. For each participant, the investigator took one to two face-to-face individual in-depth interview sessions, each for a duration of about 20–50 minutes. The interview sessions were conducted in a specific enclosure exclusively arranged by the hospital authorities. During each session of the in-depth interview, the investigator attempted to elicit rich qualitative data to understand the living pattern and dynamics of positive living amidst chronic illness focusing on five aspects—participant's lifestyle, first experience with the illness, experience of living with the illness, reasons for adherence (high or low), and measures to fight the illness for better living. The protocol of standard in-depth interview was followed as objectively as possible by the investigator. As the demographic data were already collected, the same were not collected again from the 14 identified participants. After the completion of the interview process, each participant was debriefed by the investigator. It took two months' time to complete the interview process (qualitative) by considering the availability of participants.

CHAPTER IV

RESULTS

The results were discussed by using both quantitative and qualitative data. The first objective was addressed by means of analysing quantitative data, whereas the second objective was addressed by means of analysing qualitative data. In addition to this, the investigator's observation report was also taken into consideration for analysing the results. Basing on the findings of the quantitative and qualitative data analyses, investigator's observation, and evidence-based studies, the third objective was addressed. The results were discussed under seven major headings in the line of three objectives and investigator's observation report. The first paragraph under each heading explained the data analysis techniques followed by the analyses and interpretation. The quantitative data were analysed by using IBM SPSS Statistics 20.

Nature of the variables and descriptive statistics

There were four categories of variables under study—adherence, psychological distress, positive health resource, and important demographic variables. All these variables were measured in term of interval level except three variables under demographics—duration of illness, systolic BP, and diastolic BP—that were measured in the term of ratio level. The minimum and maximum scores, *M*, and *SD* were calculated in addition to the estimation of 95% Confidence Interval (*CI*) in respect of each variable under study. The results were presented in Table 1.

From Table 1, it is observed that the scores of adherence varied from 36 to 40 (*M* = 44.66, *SD* = 4.43, 95% *CI*: 44.15, 44.16). In case of psychological distress, the scores of anxiety ranged from 5 to 14 (*M* = 11.27, *SD* = 2.11, 95% *CI*: 11.03, 11.51), whereas the scores of depression varied from 6 to 12 (*M* = 9.77, *SD* = 1.59, 95% *CI*: 9.58, 9.95). Under positive health resource, the scores of hope, optimism, and self- efficacy

Table 1

Means, Standard Deviations, minimum scores, maximum scores, and 95% CIs of the variables under study

Variables	*M* (*SD*)	Min	Max	95% *CI*	
				LL	UL
Adherence					
Total	44.66 (4.43)	36	50	44.15	44.16
Medication	23.42 (2.93)	16	27	23.08	23.75
Diet	7.72 (1.43)	2	10	7.55	7.88
Exercise	7.44 (1.45)	7	10	7.38	7.50
Self-monitoring	5.34 (1.11)	3	8	5.21	5.47
Psychological distress					
Anxiety	11.27 (2.11)	5	14	11.03	11.51
Depression	9.77 (1.59)	6	12	9.58	9.95
Positive health resource					
Hope	44.72 (7.30)	35	56	43.88	45.55
Optimism	17.99 (3.90)	8	28	17.55	18.44
Self-efficacy	5.61 (1.21)	3.67	8.50	5.47	5.75
Important demographic variables					
Age	46.09 (6.33)	31	60	45.37	46.82
Duration of illness	21.05 (10.88)	6	52	19.81	22.29
Systolic BP	141.25 (3.45)	132	150	140.86	141.65
Diastolic BP	92.47 (2.76)	85	100	92.15	92.79

Note. Min = Minimum scores; Max = Maximum scores; CI = Confidence Interval; LL = Lower Limit; UL = Upper Limit

varied from 35 to 56 (*M* = 44.72, *SD* = 7.30, 95% *CI*: 43.88, 45.55), 8 to 28 (*M* = 17.99, *SD* = 3.90, 95% *CI*: 17.55, 18.44), and 3.67 to 8.50 (*M* = 5.61, *SD* = 1.21, 95% *CI*: 5.47, 5.75) respectively. In addition to these, there were four demographic variables—age, duration of illness, systolic BP, and diastolic BP. The age of the participants measured in term of years varied from 31 to 60 (*M* = 46.09, *SD* = 6.33, 95% *CI*: 45.37, 46.82). The duration of illness measured in terms of months ranged from 6 to 52 (*M* = 21.605, *SD* = 10.88, 95% *CI*: 19.81, 22.29). The systolic and diastolic BP measured in terms of mmHg varied from 132 to 150 (*M* = 141.25, *SD* = 3.45, 95% *CI*: 140.86, 141.65) and 85 to 100 (*M* = 92.47, *SD* = 2.76, 95% *CI*: 92.15, 92.79) respectively. From the results, high precision of estimations of population parameters were observed in case of all the variables as the widths of the *CI*s were found to be narrow.

Correlation between adherence and its determinants

As the sample was found to be homogeneous, product moment correlation coefficients (Pearson's *r*) between the three categories of predictor variables or determinants (Psychological distress, Positive health resource, and Important demographic variables) and Adherence with its four domains were calculated (*N* = 296). The results are presented in Table 2. Taking into consideration the individual dimensions, the three categories of determinants gave rise to 12 variables which are presented in the first column of the Table 2.

As can be seen in Table 2, out of 12 variables except five demographic variables—Diastolic BP, Duration of illness, Gender, Co-morbid illness, and Family history—other eight variables were significantly correlated with Adherence. Out of these eight correlated variables, four variables—Anxiety, Hope, Optimism, and Self-efficacy—were positively correlated with Adherence, and three variables—Depression,

Table 2

Product-moment correlation coefficients between adherence and its determinants

Determinants	Adherence				
	Total	Medication	Diet	Exercise	Self-monitoring
Psychological distress					
Anxiety	.34**	.15**	.29**	.37**	.11*
Depression	-.12*	-.07	-.25**	.022	.21**
Positive health resource					
Hope	.83**	.69**	.58**	.62**	-.39**
Optimism	.37**	.27**	.26**	.16**	-.27**
Self-efficacy	.68**	.53**	.58**	.49**	-.48**
Important demographic variables					
Age	-.13*	-.24**	.01	-.11	.03
Systolic BP	-.13*	-.06	-.14*	.40	.19**
Diastolic BP	-.03	-.02	-.05	.03	-.08
Duration of hypertension	-.08	-.05	-.07	-.10	-.10
Gender[a]	.02	.01	.06	.03	.05
Co-morbid illness[b]	.07	.07	.05	.12*	-.17**
Family history	.10	-.05	.22**	-.03	.02

Note. [a] Female = 0, Male = 1, [b] Present = 0, Absent = 1
N = 296
*$p < .05$, **$p < .01$, ***$p < .001$

Age, and Systolic BP—were negatively correlated with Adherence. The correlation coefficients varied between .83 and .34. Out of all the significant correlation coefficients, the strongest significant correlation coefficient was found between Hope and Adherence (r = .83, p < .001), whereas the weakest correlation coefficient was found between Anxiety and Adherence (r = .34, p < .01). Moreover, strongest significant negative correlation was found between Age and Adherence (r = -.13, p < .05), and Systolic BP and Adherence (r = -.13, p < .05).

Out of 12 variables five variables—Anxiety, Hope, Optimism, Self-efficacy, and Age—were significantly correlated with Adherence to medication. Out of the five correlated variables four—Anxiety, Hope, Optimism, and Self-efficacy—were positively correlated with Adherence to medication, and Age was negatively correlated with Adherence to medication. The correlation coefficients varied between .69 and .15. Out of all the significant correlation coefficients, the strongest significant correlation coefficient was found between Hope and Adherence to medication (r = .69, p < .001), whereas the weakest correlation coefficient was found between Anxiety and Adherence to medication (r = .15, p < .01). Moreover, significant negative correlation was found between Age and Adherence to medication (r = -.24, p < .01).

Out of 12 variables except five demographical variables—Age, Diastolic BP, Duration of illness, Gender, and Co-morbid illness—other seven variables were significantly correlated with Adherence to diet. Out of the seven correlated variables, five—Anxiety, Hope, Optimism, Self-efficacy, and Family history—were positively correlated with Adherence to diet, and two—Depression and Systolic BP—were negatively correlated with Adherence to diet. The correlation coefficients varied between .58 and .22. Out of all the significant correlation coefficients the strongest significant correlation coefficient was found between Hope and Adherence to diet (r = .58, p < .001),

whereas the weakest correlation coefficient was found between Family history and Adherence to diet (r = .22, p < .01). Moreover, strongest significant negative correlation was found between Depression and Adherence to diet (r = -.25, p < .01).

Out of 12 variables five variables—Anxiety, Hope, Optimism, Self-efficacy, and Co-morbid illness—were significantly positively correlated with Adherence to exercise. The correlation coefficients varied between .62 and .12. Out of all the significant correlation coefficients, the strongest significant correlation coefficient was found between Hope and Adherence to exercise (r = .62, p < .001), whereas the weakest correlation coefficient was found between Co-morbid illness and Adherence to exercise (r = .12, p < .01).

Out of 12 variables, except five demographic variables—Age, Diastolic BP, Duration of illness, Gender, and Family history—other eight variables were significantly correlated with Adherence to self-monitoring. Out of the seven correlated variables three—Anxiety, Depression, and Systolic BP—were positively correlated with Adherence to self-monitoring and four—Hope, Optimism, Self-efficacy, and other Co-morbid illness—are negatively correlated with Adherence to self-monitoring. The correlation coefficients varied between .21 and .11. Out of all the significant correlation coefficients, the strongest significant correlation coefficient was found between Depression and Adherence to self-monitoring (r = .21, p < .01), whereas the weakest correlation coefficient was found between Anxiety and Adherence to self-monitoring (r = .11, p < .05). Moreover, strongest significant negative correlation was found between Self-efficacy and Adherence to self-monitoring (r = -.48, p < .01).

Major determinants of adherence

To identify the major determinants of adherence among persons with primary hypertension, hierarchical regression analysis was found to be the suitable statistical

analysis to be carried out. Before running the analysis, a series of simple linear regression analyses was computed to find out the role of each correlated variable in determining the Adherence and its domains. The results are presented in Tables B1 to B5 (*Appendix B*). From Table B1, it is observed that Anxiety, Depression, Hope, Optimism, Self-efficacy, Age, and Systolic BP were individual predictors of Adherence. From Table B2, it is found that Anxiety, Hope, Optimism, Self-efficacy, and Age were individual predictors of Adherence to medication. From Table B3, it is evident that Anxiety, Depression, Hope, Optimism, Self-efficacy, and Systolic BP were individual predictors of Adherence to diet. From Table B4, it observed that Anxiety, Hope, Optimism, Self-efficacy, and Co-morbid illness were individual predictors of Adherence to exercise. From Table B5, it seen that Anxiety, Depression, Hope, Optimism, Self-efficacy, Systolic BP, and Co-morbid illness were individual predictors of Adherence to self-monitoring.

To identify the major determinants of Adherence, hierarchical regression analyses were computed by taking Adherence and its four domains as criterion and three categories of its correlates as predictors using IBM SPSS Statistics 20. Before running the hierarchical regression analyses, the assumptions were tested. The sequence of the entry of the three categories of predictors into the model was followed by making three blocks—Block 1 (Psychological distress), Block 2 (Positive health resource), and Block 3 (Demographic correlates).

Table 3 presents the results of hierarchical regression analysis done by taking the three categories of predictors for Adherence (N = 296). The analysis gave rise to three models. Model 1, with anxiety and depression as the predictors, was significant, $F(2, 293) = 22.81$, $p < .001$ and explained 13% significant proportion of variance in Adherence (Adjusted $R^2 = .13$). Both Anxiety ($\beta = .347$, $t = 6.39$, $p < .001$) and Depression ($\beta = -.129$, $t = 2.38$, $p < .05$) were found to be significant individual predictors

Table 3

Summary of hierarchical regression analysis for identifying major determinants of Adherence in persons with primary hypertension (N = 296)

Model and determinants	*B*	*SEB*	*β*	R^2	ΔR^2
Model 1 (*C* = 39.94, *F* = 22.81*)**				**.13**	
Psychological distress					
Anxiety	.73	.11	.347***		
Depression	-.36	.15	-.129*		
Model 2 (*C* = 20.18, *F* = 372.48*)**				**.86**	**.73*** **
Psychological distress					
Anxiety	-1.31	.07	-.626***		
Depression	.37	.07	.134***		
Positive health resource					
Hope	.78	.03	1.291***		
Optimism	-.01	.03	-.011		
Self-efficacy	.15	.13	.040		
Model 3 (*C* = 13.26, *F* = 269.81*)**				**.87**	**.01**
Psychological distress					
Anxiety	-1.34	.07	-.637***		
Depression	.37	.07	.132***		
Positive health resource					
Hope	.80	.03	1.317***		
Optimism	-.01	.03	-.008		
Self-efficacy	.10	.13	.029		
Demographic correlates					
Age	.03	.02	.046*		
Systolic BP	.04	.03	.029		

Note. *C* = Constant, *B* = Unstandardized beta coefficient, *SEB* = Standardized error of beta, *β* = Standardized beta coefficient, $\Delta R^2 = R^2$ change
*$p < 0.05$, **$p < 0.01$, ***$p < .001$

of Adherence. Model 2, in which hope, optimism, and self-efficacy were added, was found significant, $F(5, 290) = 372.48$, $p < .001$ and explained 73% more significant proportion of variance, R^2 change = .73, F change(3, 290) = 524.15, $p < .001$, amounting to total 86% significant proportion of variance in Adherence (Adjusted $R^2 = .86$). The significant individual predictors in Model 2 were Anxiety ($\beta = -.626$, $t = 18.79$, $p < .001$), Depression ($\beta = .134$, $t = 5.50$, $p < .001$), and Hope ($\beta = 1.291$, $t = 28.01$, $p < .001$). Model 3, in which two significant demographic correlates (age and systolic BP) were added, was found significant, $F(7, 288) = 269.82$, $p < .001$, but did not add any more significant proportion of variance to the Model 2, R^2 change = .01, F change(2, 288) = 2.64, $p = .07$. Nevertheless, Anxiety ($\beta = -.637$, $t = 18.99$, $p < .001$), Depression ($\beta = .132$, $t = 5.41$, $p < .001$), Hope ($\beta = 1.32$, $t = 27.82$, $p < .001$), and Age ($\beta = .046$, $t = 2.05$, $p < .05$) were found to be significant individual predictors in this model. As Model 3 did not add any more significant proportion of variance to Model 2, the significant individual predictors of Model 2 were considered as the major determinants of Adherence among persons with primary hypertension.

Table 4 presents the results of hierarchical regression analysis done by taking the three categories of predictors for Adherence to medication. The analysis gave rise to three models. Model 1, with anxiety as the predictor, was significant, $F(1, 294) = 6.41$, $p < .001$ and explained 2% significant proportion of variance in Adherence to medication. Anxiety ($\beta = .146$, $t = 2.53$, $p < .001$) was found to be significant individual predictor of Adherence to medication. Model 2, in which hope, optimism, and self-efficacy were added, was found significant, $F(4, 291) = 278.94$, $p < .001$ and explained 77% more significant proportion of variance, R^2 change = .77, F change(3, 291) = 361.92, p < .001, amounting to total 79% significant proportion of variance in Adherence to medication (Adjusted $R^2 = .79$). The significant individual predictors in Model 2 were Anxiety ($\beta =$

Table 4

Summary of hierarchical regression analysis for identifying major determinants of Adherence to medication in persons with primary hypertension (N = 296)

Model and determinants	*B*	*SEB*	*β*	R^2	ΔR^2
Model 1 (*C* = 21.14 , *F* = 6.41*)				**.02**	
Psychological distress					
Anxiety	.20	.08	.146*		
Model 2 (*C* = 13.25, *F* = 27.94*)**				**.79**	**.77*** **
Psychological distress					
Anxiety	-1.15	.06	-.831***		
Positive health resource					
Hope	.59	.02	1.485***		
Optimism	-.05	.02	-.073*		
Self-efficacy	-.44	.10	-.184***		
Model 3 (*C* = 14.65, *F* = 227.01*)**				**.80**	**.01***
Psychological distress					
Anxiety	-1.13	.06	-.818***		
Positive health resource					
Hope	.58	.02	1.455***		
Optimism	-.05	.02	-.073*		
Self-efficacy	-.41	.10	-.168***		
Demographic correlate					
Age	-.03	.01	-.060*		

Note. *C* = Constant, *B* = Unstandardized beta coefficient, *SEB* = Standardized error of beta, *β* = Standardized beta coefficient, $\Delta R^2 = R^2$ change

-.831, t = -20.57, p < .001), Hope (β = 1.485, t = 26.10, p < .001), Optimism (β = -.073, t = -2.35, p < .05), and Self-efficacy (β = -.184, t = -4.34, p < .001). Model 3, in which one significant demographic correlate (age) was added, was found significant, F(5, 290) = 227.01, p < .001, and explained 1% more significant proportion of variance to the Model 2, R^2 change = .01, F change(1, 290) = 4.78, p < .05, amounting to total 80% significant proportion of variance in Adherence to medication (Adjusted R^2= .79). The significant individual predictors of Model 3 were Anxiety (β = -.818, t = -20.13, p < .001), Hope (β = 1.455, t = 24.99, p < .001), Optimism (β = -.073, t = -2.37, p < .05), Self-efficacy (β = -.168, t = -3.94, p < .001) and Age (β = -.060, t = -2.19, p < .05). As Model 3 added more significant proportion of variance to Model 2, the significant individual predictors of Model 3 were considered as the major determinants of Adherence to medication among persons with primary hypertension.

Table 5 presents the results of hierarchical regression analysis done by taking the three categories of predictors for Adherence to diet. The analysis gave rise to three models. Model 1, with anxiety and depression as the predictors, was significant, F(2, 293) = 26.59, p < .001 and explained 15% significant proportion of variance in Adherence to diet. Anxiety (β = .301, t = 5.61, p < .001) and Depression (β = -.259, t = -4.82, p < .001) were found to be significant individual predictors of Adherence to diet. Model 2, in which hope, optimism, and self-efficacy were added, was found significant, F(5, 290) = 40.65, p < .001 and explained 26% more significant proportion of variance, R^2 change = .26, F change(3, 290) = 42.49, p < .001, amounting to total 41% significant proportion of variance in Adherence to diet (Adjusted R^2 = .40). The significant individual predictors of Model 2 were Anxiety (β = -.213, t = -3.06, p < .01), Hope (β = .556, t = 5.78, p < .001), and Self-efficacy (β = .252, t = 3.34, p < .001). Model 3, in which two significant demographic correlates (Systolic BP and Family history of

Table 5

Summary of hierarchical regression analysis for identifying major determinants of Adherence to diet in persons with primary hypertension (N = 296)

Model and determinants	*B*	*SEB*	*β*	R^2	ΔR^2
Model 1 (*C* = 7.69, *F* = 26.59*)**				**.15**	
Psychological distress					
Anxiety	.20	.04	.301***		
Depression	-.23	.05	-.259***		
Model 2 (*C* = 3.76, *F* = 40.65*)**				**.41**	**.26*** **
Psychological distress					
Anxiety	-.14	.05	-.213**		
Depression	-.06	.04	-.072		
Positive health resource					
Hope	.11	.02	.556***		
Optimism	-.02	.02	-.049		
Self-efficacy	.30	.09	.252***		
Model 3 (*C* = 4.95, *F* = 40.75*)**				**.50**	**.09*** **
Psychological distress					
Anxiety	-.15	.04	-.224***		
Depression	-.16	.04	-.177***		
Positive health resource					
Hope	.11	.02	.549***		
Optimism	-.02	.02	-.046		
Self-efficacy	.29	.08	.247***		
Demographic correlates					
Systolic BP	.00	.02	-.011		
Family history[a]	.90	.13	.311***		

Note. *C* = Constant, *B* = Unstandardized beta coefficient, *SEB* = Standardized error of beta, *β* = Standardized beta coefficient, $\Delta R^2 = R^2$ change

[a] Present = 0, Absent = 1

*$p < 0.05$, **$p < 0.01$, ***$p < .001$

hypertension) were added, was found significant, $F(7, 288) = 40.75$, $p < .001$, and explained 9% more significant proportion of variance to the Model 2, R^2 change = .09, F change(2, 288) = 24.53, $p < .001$, amounting to total 50% significant proportion of variance in Adherence to diet (Adjusted $R^2 = .485$). The significant individual predictors of Model 3 were Anxiety ($\beta = -.224$, $t = -3.47$, $p < .001$), Depression ($\beta = -.177$, $t = -3.56$, $p < .001$), Hope ($\beta = .549$, $t = 6.14$, $p < .001$), Self-efficacy ($\beta = .247$, $t = 3.52$, $p < .001$), and Family history of hypertension ($\beta = .311$, $t = 7.02$, $p < .05$). As Model 3 added more significant proportion variance to Model 2, hence the significant individual predictors of Model 3 were considered as the major determinants of Adherence to diet among persons with primary hypertension.

Table 6 presents the results of hierarchical regression analysis done by taking the three categories of predictors for Adherence to exercise. The analysis gave rise to three models. Model 1, with anxiety as the predictor, was significant, $F(1, 294) = 48.22$, $p < .001$ and explained 14% significant proportion of variance in Adherence to exercise. Anxiety ($\beta = .375$, $t = 6.94$, $p < .001$) was found to be significant individual predictor of Adherence to exercise. Model 2, in which hope, optimism, and self-efficacy were added, was found significant, $F(4, 291) = 53.14$, $p < .001$ and explained 28% more significant proportion of variance, R^2 change = .28, F change(3, 291) = 47.20, p < .001, amounting to total 42% significant proportion of variance in Adherence to exercise (Adjusted R^2 = .41). The significant individual predictors of Model 2 were Anxiety ($\beta = -.156$, $t = -2.31$, $p < .05$), Hope ($\beta = .828$, $t = 8.71$, $p < .001$), and Optimism ($\beta = -.196$, $t = -3.77$, $p < .001$). Model 3, in which one significant demographic correlate (Co-morbid illness) was added, was found significant, $F(5, 290) = 42.60$, $p < .001$, but did not add any more significant proportion of variance to the Model 2, R^2 change = .00, F change(2, 288) = 2.64, $p = .07$. Nevertheless, Anxiety ($\beta = -.151$, $t = -2.22$, $p < .05$), Hope ($\beta = .816$, $t =$

Table 6

Summary of hierarchical regression analysis for identifying major determinants of Adherence to exercise in persons with primary hypertension (N = 296)

Model and determinants	*B*	*SEB*	*β*	R^2	ΔR^2
Model 1 (*C* = 6.39, *F* = 48.22*)**				**.14**	
Psychological distress					
Anxiety	.09	.01	.375***		
Model 2 (*C* = 5.68, *F* = 53.14*)**				**.42**	**.28*** **
Psychological distress					
Anxiety	-.04	.02	-.156*		
Positive health resource					
Hope	.06	.01	.828***		
Optimism	-.03	.01	-.196***		
Self-efficacy	.00	.03	.005		
Model 3 (*C* = 5.65, *F* = 42.60*)**				**.42**	**.00**
Psychological distress					
Anxiety	-.04	.02	-.151*		
Positive health resource					
Hope	.06	.01	.816***		
Optimism	-.02	.01	-.189***		
Self-efficacy	.00	.03	.008		
Demographic correlate					
Co-morbid illness[a]	.05	.06	.038		

Note. *C* = Constant, *B* = Unstandardized beta coefficient, *SEB* = Standardized error of beta, *β* = Standardized beta coefficient, $\Delta R^2 = R^2$ change

[a] Present = 0, Absent = 1

*$p < 0.05$, **$p < 0.01$, ***$p < .001$

8.47, $p < .001$) and Optimism ($\beta = -.189$, $t = -3.57$, $p < .001$) were found to be significant individual predictors in this model. As Model 3 did not add any more significant proportion of variance to Model 2, the significant individual predictors of Model 2 were considered as the major determinants of Adherence to exercise among persons with primary hypertension.

Table 7 presents the results of hierarchical regression analysis done by taking the three categories of predictors for Adherence to self-monitoring. The analysis gave rise to three models. Model 1, with anxiety and depression as the predictors, was significant, $F(2, 293) = 8.60$, $p < .001$ and explained 5% significant proportion of variance in Adherence to self-monitoring. Depression ($\beta = -.206$, $t = 3.62$, $p < .001$) was found to be significant individual predictor of Adherence to self-monitoring. Model 2, in which hope, optimism, and self-efficacy were added, was found significant, $F(5, 290) = 71.38$, $p < .001$ and explained 50% more significant proportion of variance, R^2 change = .50, F change$(3, 290) = 107.58$, $p < .001$, amounting to total 55% significant proportion of variance in Adherence to self-monitoring (Adjusted $R^2 = .54$). The significant individual predictors of Model 2 were Anxiety ($\beta = .865$, $t = 14.25$, $p < .001$), Depression ($\beta = -.088$, $t = -1.99$, $p < .05$), Hope ($\beta = -.731$, $t = -8.71$, $p < .001$), Optimism ($\beta = -.165$, $t = -3.50$, $p < .001$) and Self-efficacy ($\beta = -.297$, $t = -4.51$, $p < .001$). Model 3, in which two significant demographic correlates (Systolic BP and Co-morbid illness) were added, was found significant, $F(7, 288) = 56.37$, $p < .001$, and explained 3% more significant proportion of variance to the Model 2, R^2 change = .03, F change$(2, 288) = 8.58$, $p < .001$, amounting to total 58% significant proportion of variance in Adherence to self-monitoring (Adjusted $R^2 = .57$). The significant individual predictors of Model 3 were Anxiety ($\beta = .846$, $t = 14.23$, $p < .001$), Depression ($\beta = -.095$, $t = -2.19$, $p < .05$), Hope ($\beta = -.677$, $t = -8.15$, $p < .001$), Optimism ($\beta = -.179$, $t = -3.83$, $p < .001$), Self-efficacy

Table 7

Summary of hierarchical regression analysis for identifying major determinants of Adherence to self-monitoring in persons with primary hypertension (N = 296)

Model and determinants	*B*	*SEB*	*β*	R^2	ΔR^2
Model 1 (*C* = 3.29, *F* = 8.60*)**				**.05**	
Psychological distress					
Anxiety	.06	.03	.109		
Depression	.14	.04	.206***		
Model 2 (*C* = 8.17, *F* = 71.38*)**				**.55**	**.50*****
Psychological distress					
Anxiety	.46	.03	.865***		
Depression	-.06	.03	-.088*		
Positive health resource					
Hope	-.11	.01	-.731***		
Optimism	-.05	.01	-.165***		
Self-efficacy	-.27	.06	-.297***		
Model 3 (*C* = 3.61, *F* = 56.37*)**				**.58**	**.03*****
Psychological distress					
Anxiety	.45	.03	.846***		
Depression	-.07	.03	-.095*		
Positive health resource					
Hope	-.10	.01	-.677***		
Optimism	-.05	.01	-.179***		
Self-efficacy	-.28	.06	-.304***		
Demographic correlates					
Systolic BP	.03	.01	.103**		
Co-morbid illness[a]	-.34	.10	-.129**		

Note. *C* = Constant, *B* = Unstandardized beta coefficient, *SEB* = Standardized error of beta, *β* = Standardized beta coefficient, $\Delta R^2 = R^2$ change

[a] Present = 0, Absent = 1

*$p < 0.05$, **$p < 0.01$, ***$p < .001$

(β = -.304, t = -4.74, p < .001), Systolic BP (β = .103, t = 2.61, p < .01), and Co-morbid illness (β = -.129, t = -3.30, p < .001). As Model 3 added more significant proportion of variance to Model 2, the significant individual predictors of Model 3 were considered as the major determinants of Adherence to self-monitoring among persons with primary hypertension.

Categorisation of participants and its association

To identify different categories of participants on the basis of their levels of adherence, the median split was computed (Median = 47) on total adherence score (N = 296). The percentage of participants under low adherence (78.72%, n = 233) was higher than that of the participants under high adherence (21.28%, n = 63). These percentages are presented in Figure 1 in the form of bar graph. Chi-square tests were computed to find out the association or dependency of adherence on the major demographic variables—gender, marital status, occupation, duration of illness, family history, and co-morbid illness. The chi-square test was also run to find out the association between adherence and happiness in life.

Table 8 presents the association between levels of adherence and other important variables. From the findings, it was evident that there was as a significant association found between levels of adherence and co-morbid illness (χ^2 = 9.87, p < .01) and levels of adherence and happiness in life (χ^2 = 13.98, p < .001) among persons with primary hypertension. Persons with co-morbid illness were found to be low in adherence compared to the persons without any co-morbid illness. The persons, those were happy in life, were found to be high in adherence than the persons those were not happy in life. Findings also suggested that there was no significant association found between levels

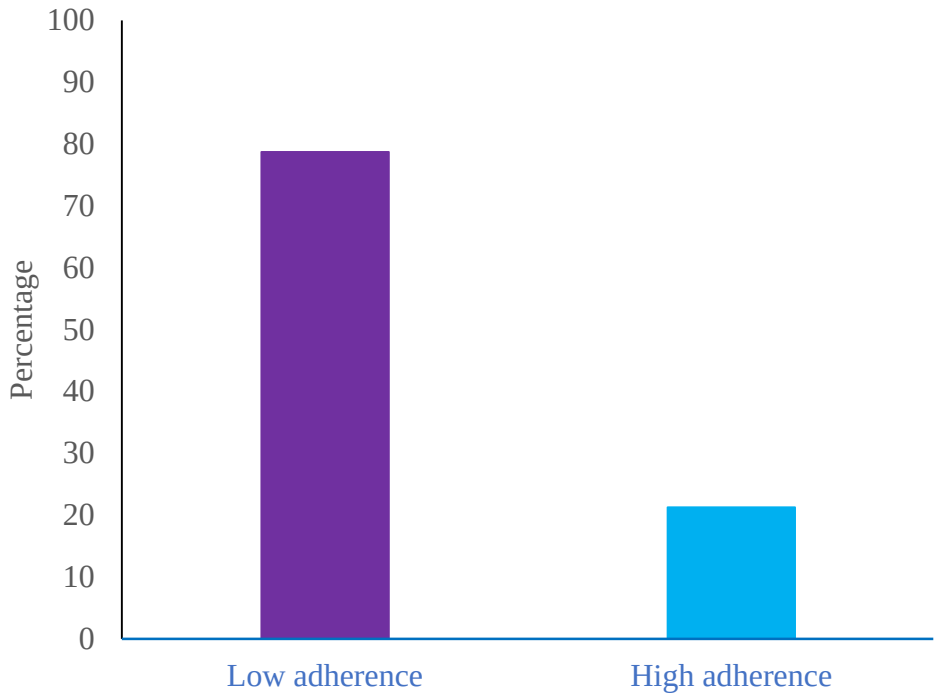


Figure 1. Bar diagram showing the percentages of the participants falling under two categories—low adherence (78.72%) and high adherence (21.28%).

Table 8

Association between levels of Adherence and other important variables (N = 296)

	Adherence			
	Low adherence *n* (%)	High adherence *n* (%)	Total *N* (%)	χ^2
Gender				.03
Men	108 (36.5%)	30 (10.1%)	138 (46.6%)	
Women	125 (42.2%)	33 (11.1%)	158 (53.4%)	
Marital status				6.52
Married	188 (63.5%)	53 (17.9%)	241 (81.4%)	
Unmarried	12 (4.1%)	2 (0.7%)	14 (4.7%)	
Divorcee	17 (5.7%)	8 (2.7%)	25 (8.4%)	
Widow(er)	16 (5.4%)	0 (0%)	16 (5.4%)	
Occupation				3.25
Unemployed	74 (25%)	19 (6.4%)	93 (31.4%)	
Private employee	19 (6.4%)	4 (1.4%)	23 (7.8%)	
Govt. employee	77 (26%)	16 (5.4%)	93 (31.4%)	
Self-employed	63 (21.3%)	24 (8.1%)	87 (29.4%)	
Duration of hypertension				
One year	80 (27%)	16 (5.4%)	96 (32.4%)	
Two years	110 (37.2%)	35 (11.8%)	145 (49%)	
3 to 5 years	43 (14.5%)	12 (4.1%)	55 (18.6%)	
Family history of hypertension				.27
Yes	101 (34.1%)	25 (8.4%)	126 (42.6%)	
No	132 (44.6%)	38 (12.8%)	170 (57.4%)	
Co-morbid illness				9.87**
Yes	62 (20.9%)	5 (1.7%)	67 (22.6%)	
No	171 (57.8%)	58 (19.6%)	229 (77.4%)	
Happy in life				13.98***
Yes	120 (40.5%)	49 (16.6%)	169 (57.1%)	
No	113 (38.2%)	14 (4.7%)	127 (42.9%)	

Note. Percentages are written row wise.
* $p < .05$, ** $p < .01$, *** $p < .001$

of adherence and gender, marital status, occupation, duration of illness, and family history of primary hypertension.

Dynamics of positive living amidst chronic illness

The second objective of the study was to explore the lived experiences of the persons with primary hypertension for understanding the dynamics of their positive living amidst chronic illness. This objective was addressed by qualitative research design where IPA was followed and data-driven thematic analysis was adopted to analyse the obtained data by help of five aspects of life—lifestyle, first experience with illness, experience of living with the illness, reasons for adherence (high/low), and measures to fight the illness for better living. Participants explained the experiences of their own lives in details which helped the investigator to gather rich qualitative data and understand their thoughts, feeling, and experiences. These qualitative data were analysed involving several certain steps as described below.

All the interviews were recorded in audio format. The investigator also noted the non-verbal behaviours of the participants during the interview. In addition to this, investigator prepared the field notes. The recorded interviews were transcribed. The transcriptions were given to two experts for translation into English independently and later on validated. From these two sets of translation, the investigator selected one set. Then the investigator read and reread it along with field notes and observation to get clarity of each participant's lived experiences. After reading it several times, codes were identified. A code was a word, phrase, or sentence which gave meaning to the lived experience of the participants. Similar types of codes were grouped together, and themes were identified. Several themes emerged over time as the data analysis proceeded. However, the themes were named and collated under a superordinate theme called 'Living pattern'. The themes along with their illustrative quotations are listed in Table 9.

Table 9

Themes with their specific illustrative quotations for positive and negative living pattern

Themes	Living pattern	
	Positive	Negative
Perception	'When I have been diagnosed with hypertension, I thought new companion is added to my life, and I should deal with it properly without ignoring it. I never faced much problem or inconvenience dealing with it.'	'I feel because of genes running in my family I got this [Hypertension]. I have faced several issues in my life, and even now I have so many issues. Even my father got hypertension after his 60 years of age, but for me, I am diagnosed with hypertension at very young age.'
Affect	'I feel, hypertension is common disease; but we get it because of so much of tension, worry, and stress in life.'	'I am stressful and I feel that my heart is beating very fast. I don't feel like being peaceful during work pressure. I avoid my children. Just give them food and say them that I am busy with work. They should understand and should not disturb me.'
Attitude	'To avoid illness our life should be disciplined; we should not deviate our life by saying enjoyment. Enjoyment means not to smoke or drink alcohol, even someone forces. We should do exercise daily. Try to maintain happiness in life; don't fight with own people and don't regret later.'	'…I eat whatever I find nearby if I am extremely hungry. My food is not time specific.'
Habit	'It is a habit for me to walk till my agriculture land early in the morning. It is around 3kms from my home.'	'I am interested in junk food. So usually I buy bakery foods and snacks I eat at McDonald's.'
Experience	'Whatever may be, peace of mind and happiness in life can make us live happily with any disease.'	'When I feel weak, I get a headache or chest pain, I take medicines for hypertension. Otherwise, it is not required.'
Management	'But after I was diagnosed with hypertension, I stopped eating all junk food [and], cholesterol-based food. Even I reduced the intake of salt. I will be very cautious about calorie intake and sodium intake because this will lead to heart attack.'	'Doctors should give us proper and sufficient time and explain so that we can follow whatever they say; I ask several questions related to my health and illness. But doctor does not have sufficient time to clarify my doubts.'

At the final stage of data analysis, the themes were linked together, and a conceptual model of positive living amidst illness was developed incorporating the positive psychology intervention package (PPIP). Figure 2 presents the conceptual model and its components.

The conceptual model of positive living amidst illness depicts the integration of the findings (quantitative and qualitative) and PPIP. The model focuses on the precipitating factors of disease and illness, the living pattern, and dynamics of positive living. Lived experiences of persons with primary hypertension are predominantly described regarding their living pattern. Living pattern refers to the typical and regular way of living the life amidst chronic illness. Living pattern includes behaviour to experiences in life. The model represents the effect of illness on the living pattern of the persons with primary hypertension and positive psychology interventions that are recommended to enable the person to progress from illness to wellness.

The model posits that out of many biopsychosocial factors, heredity, lifestyle, and psychological distress are three main etiological factors for primary hypertension—a chronic illness. After diagnosed with primary hypertension, the person's emotions and feelings get attached to it, and the subjective experience makes it an illness. Illness in this model refers to primary hypertension—a common form of chronic illness. The living pattern is one of the pivotal aspects of whole life that determines the movement of the persons with primary hypertension towards illness or wellness. The living pattern in this model focuses on six aspects—perception, affect, attitude, habit, experience, and management of illness.

Each aspect of the living pattern has two paths—positive living pattern and negative living pattern. Positive living pattern drives the persons towards wellness in

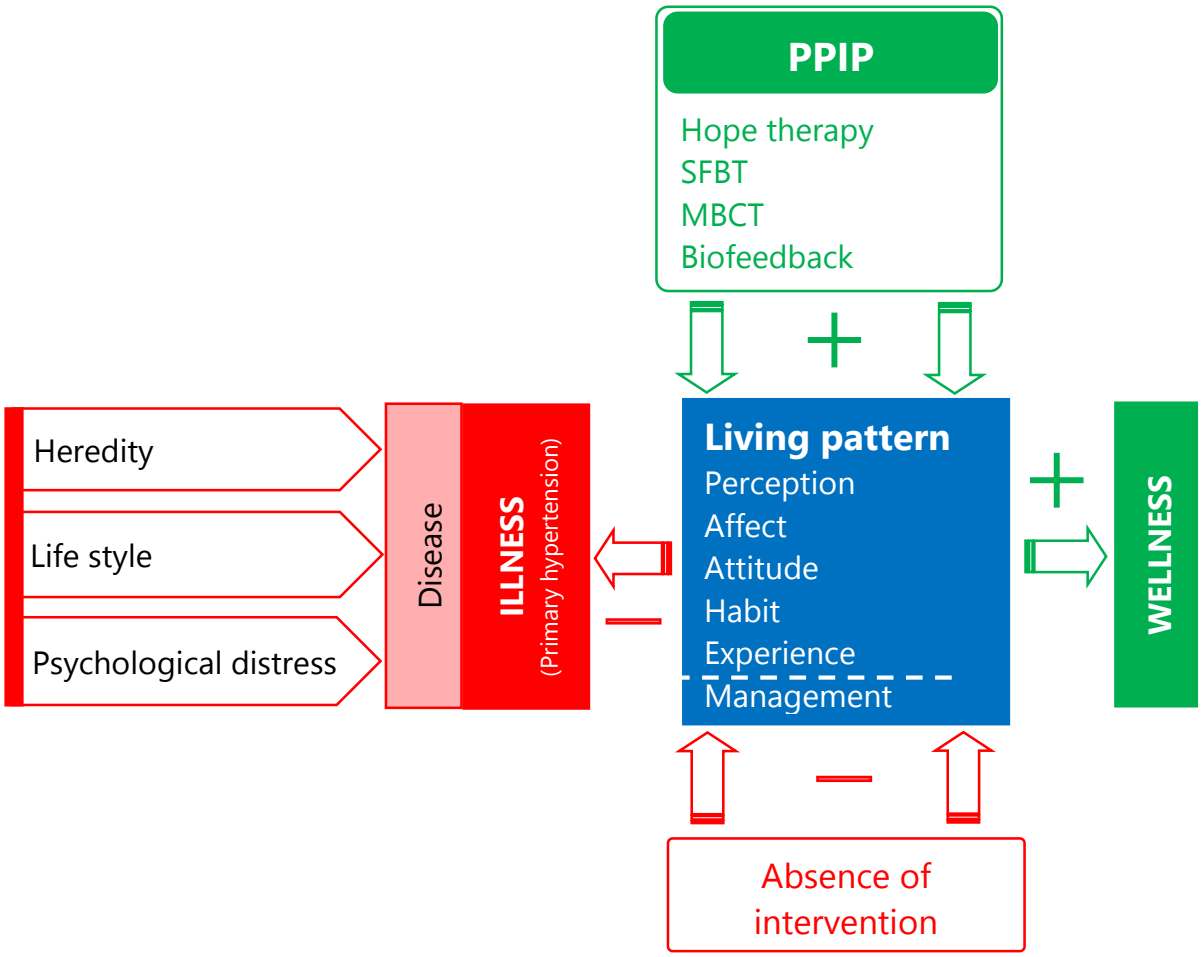


Figure 2. This conceptual model of positive living amidst illness focuses on the precipitating factors of disease and illness, primarily primary hypertension, the living pattern, and dynamics of positive living. The model posits that out of many biopsychosocial factors heredity, lifestyle, and psychological distress are three main etiological factors of primary hypertension. Due to primary hypertension, generally the persons become vulnerable to negative outcomes ('–') in the absence of proper intervention. On the other hand, if an appropriate positive psychology intervention package (PPIP) is provided with an emphasis on the management of the illness, the living pattern is likely to be positive ('+') that makes the persons progress towards wellness dimension through positive living with happiness amidst illness.

their lives, whereas negative living pattern pulls the persons towards illness in their lives. The negative living pattern is to be addressed by administering positive psychology intervention. The PPIP comprises of four therapies—hope therapy; solution-focused brief therapy (SFBT), mindfulness-based cognitive therapy (MBCT), and biofeedback. The PPIP is conceptualised to transform the person's negative living pattern to positive living pattern despite illness.

Hope therapy and SFBT are proposed to address the two precipitating factors of primary hypertension—lifestyle and management. Hope therapy is likely to foster hope in persons with primary hypertension towards adherence whereas SFBT is found to foster optimism in persons with primary hypertension towards adherence. The MBCT is recommended to reduce psychological distress and targets behaviour modification related to adherence. Biofeedback aims at assessing the efficacy of other therapies and also to reduce psychological distress by providing relaxation. If the negative living pattern is not addressed in person's life with appropriate positive psychology intervention, they are likely to be driven towards illness and future complications, such as stroke or renal failure. The positive living pattern is conceptualised to drive the persons with hypertension towards wellness in life laden with happiness.

In the model, these six aspects identified in the form of themes, have been arranged in a hierarchical way depending on their importance and dominance in the responses of the participants. These themes are illustrated below with relevant quotes.

Perception

Illness perception refers to the beliefs of persons with primary hypertension about their health problems. Perception is not only confined to the illness, i.e. primary hypertension in general, but also focuses on person's perception towards its aetiology, prognosis, consequences, and management. Illness perception is associated with

adherence to the treatment regimen in persons with primary hypertension. Basing on the data, the perception was classified into two categories—positive perception towards illness and negative perception towards illness.

Positive perception towards illness could motivate and reinforce persons with primary hypertension to manage their illness condition in a better manner.

> "When I have been diagnosed with hypertension, I thought new companion is added to my life, and I should deal with it properly without ignoring it. I never faced much problem or inconvenience dealing with it."

Negative perception towards illness was found to affect the self-efficacy which was related to management of illness in persons with primary hypertension. Eventually, it created psychological distress among persons with primary hypertension.

> "I feel because of genes running in my family I got this [hypertension]. I have faced several issues in my life, and even now I have so many issues. Even my father got hypertension after his 60 years of age, but for me, I am diagnosed with hypertension at very young age."

Affect

Affect included the emotions and feelings of persons suffering from primary hypertension. From the analysis, it was found out that the positive emotions and feelings drove the persons with primary hypertension towards wellness, whereas negative emotions and feelings drove the persons with primary hypertension towards illness.

Positive feelings despite the illness helped the persons with hypertension to be hopeful about their lives. Hope indeed boosted them to manage the illness by avoiding stress in their lives.

> "I feel, hypertension is common disease; but we get it because of so much of tension, worry, and stress in life."

Negative feelings, such as psychological distress, were found to complicate health condition. These negative feelings were responsible for non-adherence to the treatment regimen in persons with primary hypertension.

"I am stressful and I feel that my heart is beating very fast. I don't feel like being peaceful during work pressure. I avoid my children. Just give them food and say them that I am busy with work. They should understand and should not disturb me."

Attitude

Attitude included the evaluations of experiences about the illness by the persons with primary hypertension. Some exhibited a positive attitude and others negative towards their illness conditions. Attitudes towards illness were formed by past and present experiences related to illness condition. Attitude towards illness was formed by person's perception of illness and feeling towards illness.

Positive attitude towards illness was responsible for persons with primary hypertension to engage in healthy behaviours. Healthy behaviours were part of the management of primary hypertension.

> "To avoid illness our life should be disciplined; we should not deviate our life by saying enjoyment. Enjoyment means not to smoke or drink alcohol, even someone forces. We should do exercise daily. Try to maintain happiness in life; don't fight with own people and don't regret later."

It was observed that negative attitude towards illness was responsible in poor management of illness. It was also responsible for the gradual development of health risk behaviours in persons with primary hypertension. Health risk behaviours would complicate the illness condition.

> "… I eat whatever I find nearby if I am extremely hungry. My food is not time specific."

Habit

Thinking, feeling, or behaving in more or less fixed way through repeated past experiences is known as a habit. Habits are formed by regular repetitions. Though there were several habits formed as a part of life, new habits formed for managing the primary hypertension were considered as positive habits towards illness. Despite illness

condition, if the persons with primary hypertension continued with their old habits that were detrimental to their wellness, they were said to have negative habits towards illness.

Positive habits towards illness were formed according to the past experiences with illness and positive outcomes through repeated good and beneficial behaviours. Positive habits were part of the management of illness.

> "It is a habit for me to walk till my agriculture land early in the morning. It is around 3kms from my home."

Negative habits towards illness included mostly health risk behaviours that worsen the illness condition. Negative habits were formed before they were diagnosed with an illness and which they were unable to give up or engage in escape-avoidance coping like smoking, drinking excessive alcohol, and eating unhealthy foods.

> "I am interested in junk food. So usually I buy bakery foods and snacks I eat at McDonald's."

Experience

Experience with primary hypertension is a crucial step in the management of illness. Persons with hypertension were observed to undergo both positive and negative experiences in their lives with illness. These experiences affected their adherence to treatment regimens.

Persons having positive lived experience were found to have a high level of adherence. The positive living experience gave them a sense of security and confidence in their lives.

> "Whatever may be, peace of mind and happiness in life can make us live happily with any disease."

On the other hand, the negative living experience gave rise to the low level of adherence. The negative living experience gave rise to negative outcomes, like stroke or renal failure in life.

> "When I feel weak, I get a headache or chest pain, I take medicines for hypertension. Otherwise, it is not required."

Management

Adherence is an important aspect of managing primary hypertension. There were several reasons found for the persons with primary hypertension to maintain or not to maintain adherence. Those reasons acted as determinants in their paths towards lives. Reasons were classified into three levels—intra-individual, inter-individual, and environmental. The importance of adherence behaviour was not understood optimally and not followed by the majority of the persons with primary hypertension.

Awareness of illness regarding aetiology and consequences and ability to deal with psychological distress were two aspects those helped the persons with primary hypertension to manage their illness in a better way.

> "But after I was diagnosed with hypertension, I stopped eating all junk food [and], cholesterol-based food. Even I reduced the intake of salt. I will be very cautious about calorie intake and sodium intake because this will lead to heart attack."

Lack of knowledge related to illness, poor quality of doctor–patient communication, negative perceptions, and beliefs were few factors those were responsible for poor management of primary hypertension.

> "Doctors should give us proper and sufficient time and explain so that we can follow whatever they say; I ask several questions related to my health and illness. But doctor does not have sufficient time to clarify my doubts."

Positive psychology intervention package

The third objective of the study was to conceptualise and recommend an appropriate intervention package to enhance adherence with an aim to foster positive living among persons with primary hypertension. On the basis of the evidence-based studies, a PPIP was recommended to foster positive living among persons with primary hypertension. This PPIP consisted of four modules. These modules were found to be

suitable for managing the illness considering the age of the participant and duration of illness. Each of the modules was prepared to address the findings of quantitative and qualitative data analyses and investigator's observation.

The four proposed intervention modules were hope therapy, SFBT, MBCT, and bio-feedback. Hope therapy aimed at hope in persons with primary hypertension towards adherence, SFBT addressed optimism in persons with primary hypertension towards adherence, and MBCT was to reduce psychological distress and targets behaviour modification related to adherence. Relaxation through biofeedback was recommended to reduce the psychological distress—anxiety and depression.

Each module is presented in the "Discussion and Conclusion" chapter (Chapter V). There were seven components in each intervention module. They were pre-requisites, type of assessment and setting, objective, duration and frequency of session, monitoring mechanisms, core principles, and procedure of the intervention.

Investigator's observation report

While administering the measures, certain observations were made by the investigator. Several participants were hesitant to take part in the study. After explaining the objectives of the study, few of them gave consent to be part of the study, and they took part in the study. Few participants dropped out from the study because of time constraint. The hospital staff were very supportive in identifying the participants for the study. Most of the participants were interested to seek clarifications about their doubts regarding their illness. This was because of the very minimal time spent by a doctor with the participant. Very few participants had an opinion that their illness was purely physiological. They opined that this study could not help them in any way. Several participants tried to discuss their issues after administration of measures.

The investigator observed that most of the participants and health care providers in the hospital are paying attention only to a biological aspect. They did not have any idea about the role of psychosocial aspects in dealing with illness. After the assessment participants were interested in discussing psychological aspects like stress, tension, and anxiety. Most of the participants were unaware about BP readings. They did not know the purpose of medicines which they took. They gave the least importance to diet (except eating salty food) and physical exercise. They know that they should do physical exercise, but they had a lot of social stigma about it. People from rural areas specifically had apprehension that what others in village commented on them while they went for a brisk walk. Few of the participants who were overweight and advised by the doctors to reduce weight felt that another problem occurred that was not at all related to hypertension.

Assessment provoked most of the participants to think about their illness from a psychosocial perspective. They never thought that psychosocial aspects would have an impact on illness. Even few health care providers said that they did not give any importance to psychosocial aspects in dealing with hypertension. They also opined that they usually prescribed the patients to have physical exercise and asked them to cut down on salty food ritually without explaining its importance in dealing with primary hypertension. It was also observed that very few participants were aware of further complications of hypertension if it was not managed. Few participants were aware of alarm signals of stroke. It was observed that doctors did not explain in details the importance of adherence, complications, and alarm signals. It was also observed that patients waited almost three hours to meet the doctors. The BP was monitored by nursing staff, and up on enquiry by the patients, the nursing staff did not inform the same to the patients.

The investigator observed that though rapport was established before assessment through measures, during the interview process most of the participants were hesitant to share their living experiences. The majority of them initially said that did not have time more than 15 minutes for the interview. But they did not mind about time after they were into the interview process. During interview process, it was found that the participants became nostalgic and enthusiastic to share their feelings, experiences, and lifestyle. Few of them were emotional while sharing their experiences. Few of them regretted about their mistakes, what they had done for which they were suffering. Most of them had a feeling that in hospital setup no one had spent the time that the investigator had spent with them. They were very much surprised to understand what way their interview was helpful. Few of them were always going out of the focus of the discussion; the investigator found it very difficult to bring them back to the point of discussion. Few of them were found to be keen on discussing their personal problems and were expecting quick solutions to overcome those. It was also observed that the paramedical staff of the hospital were worried about the complaints brought against them by the participants. Few of the paramedical staff regularly enquired about the participants' reactions towards them and if any complaints were reported against them. The investigator mentioned confidentiality and followed the ethical guidelines throughout the research.

CHAPTER V

DISCUSSION AND CONCLUSION

This chapter presents the findings, intervention modules, limitations and future direction, implications, and conclusion of this study. *First*, findings are discussed according to the research questions and objective in light of relevant studies. *Second*, intervention modules are presented in details. *Third*, the major limitations and future direction are discussed. *Finally*, the implications of the present study are discussed followed by a conclusion.

The first objective of the study was to identify the major determinants of adherence among persons with primary hypertension. The results of present study revealed that anxiety, hope, optimism, and self-efficacy are significantly positively correlated with adherence, whereas depression, age, systolic BP, diastolic BP, and duration of hypertension are significantly negatively correlated with adherence. This implies that when there is an increase in anxiety as psychological distress and positive health resource (hope, optimism, and self-efficacy), there is an increase in adherence among persons with primary hypertension. It is also observed from the findings that when there is an increase in depression, age, systolic and diastolic BP, and duration of illness, there is a decrease in the level of adherence among persons with primary hypertension.

Several studies corroborate to the findings of the study. Research shows that lack of anxiety is correlated with patient's non-adherence (Bautista, Vera-Cala, Colombo, & Smith, 2012). Hope and optimism are found to be positively correlated with adherence (Nsamenang & Hirsch, 2015). Optimism is most robustly associated with a reduced risk of cardiovascular events (Boehm & Kubzansky, 2012). Research findings also show that optimism as a positive psychological attribute enables the patients to have a higher level of adherence (Nabi et al., 2008) and well-being (Millstein et al., 2016). A study done by

Criswell, Weber, Xu, and Carter (2010) has stated that self-efficacy and social support help the patients to improve their overall adherence. Nevertheless, a study conducted by Steiner et al. (2010) has revealed that age is positively correlated with adherence which is contrary to the findings of the study. The findings of the study are also contrary to existing literature that says that the older persons adhere more than, the younger ones.

Findings of the study also revealed that anxiety, hope, optimism, and self-efficacy are significantly positively correlated with adherence to medication, diet, and exercise among persons with primary hypertension. This implies that when there is an increase in anxiety, hope, optimism, and self-efficacy, there is also an increase in adherence among persons with primary hypertension. The results also show a significant positive correlation between adherence to diet and family history, and adherence to exercise and co-morbid illness. Significant negative correlation has been observed between age and adherence to medication, whereas depression and systolic BP are found to be negatively correlated with adherence to the diet. It is also evident that anxiety, depression, and systolic BP are found to be significantly positively correlated with adherence to self-monitoring. Positive health resource and co-morbid illness are observed to be significantly positively correlated with self-monitoring.

Research studies have shown that high in optimism and self-efficacy are associated with higher level of adherence to medication (Milam, Richardson, Marks, Kemper, & Mccutchan, 2004). Research findings also suggest that chronic illness patients having depressive symptoms have an association with non-adherences to diet (Khalil, Frazier, Lennie, & Sawaya, 2011). The findings of the study strongly advocate the need for moderate daily physical activity to manage hypertension. In several studies, it is revealed that optimum level of anxiety makes the individuals more active and engages them in physical activities or exercise (Biddle & Mutrie, 2007). Several studies

revealed that hope and optimism are associated with exercise (Baranowski, 2017; Vandewater, Park, Hebert, & Cummings, 2015).

Feeling fearful about the illness condition motivates or forces the persons with primary hypertension intrinsically to consult a physician as prescribed and also to self-monitor BP at home. Investigator has observed that participants with high levels of hope, optimism, and self-efficacy feel that they adhere to all other domains of adherence except self-monitoring. They are found to give less importance to self-monitoring. From the observation, the investigator has also identified that though participants have high levels of hope, optimism, and self-efficacy, they are found to be demotivated to consult the doctors because of the delay in consultation time and long waiting hours at the clinic.

From the results, it is evident that all the significant correlates of adherence independently predict adherence and its dimensions. The findings state that psychological distress (anxiety and depression) and hope are the major determinants of adherence among persons with primary hypertension.

Hope has received considerable attention in the health-care literature and for good reason hopefulness, at least measured as a dispositional variable, predicts a plethora of positive patient outcomes, including lower incidence of hypertension (Richman et al., 2005), better immune functioning (Segerstrom, Taylor, Kemeny, & Fahey, 1998), faster recovery from a number of illnesses (Groopman, 2007), and adherence to treatment recommendations (Berg, Rapoff, Snyder, & Belmont, 2007). Indeed, cross-sectional studies have shown a higher level of non-adherence in hypertensive patients with increased severity of depression symptoms (Morris et al., 2006).

The results of the present study reveal that anxiety and hope are the major determinants of adherence to medication, adherence to diet, adherence to exercise, and adherence to self-monitoring along with other determinants. Results also reveal that

optimism is found to be the major predictor of three dimensions of adherence—medication, exercise, and self-monitoring. From the findings, it is also evident that self-efficacy is a major determinant to three dimensions of adherence—medication, diet, and self-monitoring. Whereas, depression is identified as a major determinant to two dimensions of adherence—diet and self-monitoring. Along with above-mentioned determinants, age is identified as a major determinant of adherence to medication, family history as a major determinant of adherence to diet, and systolic BP and co-morbid illness are major determinants of adherence to self-monitoring.

Positive affect, optimism, hope, and future orientation are beneficially associated with treatment adherence, whereas pessimism and negative affect are negatively related to adherence. Research studies say that in multivariate models, only negative affect, optimism and hope remained significant and in a comparative model, trait hope is most robustly associated with treatment adherence (Nsamenang & Hirsch, 2014). Optimism predicts adherence in persons with primary hypertension (Räikkönen & Matthews, 2008). Managing diet is an important strategy that plays a crucial role in managing hypertension (Schwingshackl & Hoffmann, 2015). Depression contributes to overeating and adopting a sedentary lifestyle (Suris, Michaud, Akre, & Sawyer, 2008). Several studies have identified that physical activity is inversely related to the development of hypertension (Carnethon et al., 2010). A study conducted by Ostir, Berges, Markides, and Ottenbacher (2006) has indicated an association between high positive emotion, self-monitoring, and lower blood pressure among older Mexican Americans.

The findings also reveal that the percentage of participants under low adherence category is found to be three-and-half times more than that of the participants under high adherence category. This observation is alarming as low adherence makes the persons with primary hypertension vulnerable to further complications in life. This also reminds

and suggests us to design approprite intervention for enhancing adherence. Further, to understand the wellness component, the present study has measured happiness in life among person with primary hypertension. The study has also measured the association between demographic correlates and level of adherence. Out of all the demographic correlates—co-morbid illness and happiness in life—are associated with the level of adherence. Further, the study reveals that persons who are happy in life are associated with high level of adherence than persons who are not happy in life. The findings shows that persons who do not have any co-morbid illness are associated with high level of adherence than persons who have a co-morbid illness. Research findings state that happiness in life is associated with lower distress and predicts a higher level of adherence among persons with primary hypertension (Craner et al., 2017).

The second objective of the study was to explore the lived experiences of the persons with hypertension for understanding the dynamics of positive living amidst chronic illness. A conceptual model of positive living amidst illness has been developed by the findings (quantitative and qualitative) of the study with an integration of PPIP. This model focuses on the living pattern of the persons with primary hypertension. The living pattern is unique for every illness condition. The study has discussed the lived experiences of the persons with primary hypertension under six themes—perception, affect, attitude, habit, experience, and management. The conceptual model explains the nature of living pattern among persons with primary hypertension. This living pattern becomes positive or negative depending upon its movement towards illness or wellness in illness–wellness continuum. Positive living pattern drives the persons with primary hypertension towards positivity in life in the direction of attaining happiness whereas negative living pattern drags the persons with primary hypertension towards negativity in life. The recommended PPIP in the model targets to transform negative living pattern

to positive living pattern among persons with primary hypertension. Findings of the research conducted by Monroe, Rowe, Moore, and Chander, (2013) have revealed that living pattern is crucial in managing chronic illness including primary hypertension and living pattern also predicts the individual level of wellness.

The third objective of the study is to conceptualise and recommend an intervention package to enhance the adherence with an aim to foster positive living among persons with primary hypertension. From the findings of the study (quantitative and qualitative), a PPIP is recommended. The PPIP comprises of four modules—hope therapy, SFBT, MBCT, and biofeedback. The PPIP is conceptualised from evidence-based studies. Each module of PPIP has been tailor made to address the living pattern regarding adherence and psychological distress. Each module of the PPIP is described regarding nine components, from theoretical framework to termination of the therapy.

From the findings of the study conducted by Cheavens et al. (2006) have revealed the efficacy of hope therapy. Hope therapy has improved the psychological strengths, such as hope and meaning in life, whereas decreased the psycho-pathological symptoms, like anxiety and depression among general participants. A study conducted by Gingerich and Peterson (2013) has revealed that SFBT is an effective treatment to enhance optimism and other behavioural outcomes. Research findings of Chiesa and Serretti (2011) have suggested that MBCT is effective in treating patients who have a relapse of major depression. Greenhalgh, Dickson, and Dundar (2010) have reviewed the effect of biofeedback in terms of GSR among persons with primary hypertension and identified that in majority of the studies biofeedback in terms of GSR, plays crucial role in reducing anxiety level among persons with primary hypertension, whereas very few studies have shown that biofeedback in terms of GSR is not effective in managing hypertension.

Considering own observation and experience during the process of this study, the investigator has emphasised upon the central role of Health Psychologist in the health care for persons with chronic illness to provide PPIP that would enable the persons with chronic illness to maintain and sustain adherence to the prescribed treatment regimen. The PPIP has emphasised primarily on the management of the chronic illness. Because of its impact, the living pattern is likely to be positive that makes the persons progress towards wellness dimension through positive living with happiness amidst illness. Each of the four modules under the recommended PPIP is delineated below.

Positive psychology intervention package (PPIP)

Module 1: Hope therapy

Hope therapy has been developed by the hope theory (Snyder, 1994). It is one of the most successful and well-accepted therapies in the field of Positive Psychology. Hope therapy can be used to foster adherence of persons with hypertension by making them engaged in pathways thinking and agency thinking.

Prerequisites. The age of the participant should be preferably between 30 to 60 years. The participant is to be diagnosed with primary hypertension with low hope and adherence scores. There should not be any known psychiatric disorder in the participant.

Type of assessment and setting. Individual assessment is preferred to group assessment. To control the impact of extraneous variables and draw adequate attention during the session, the therapy is appropriate to be conducted in a controlled environment, preferably in a clinical or laboratory setting.

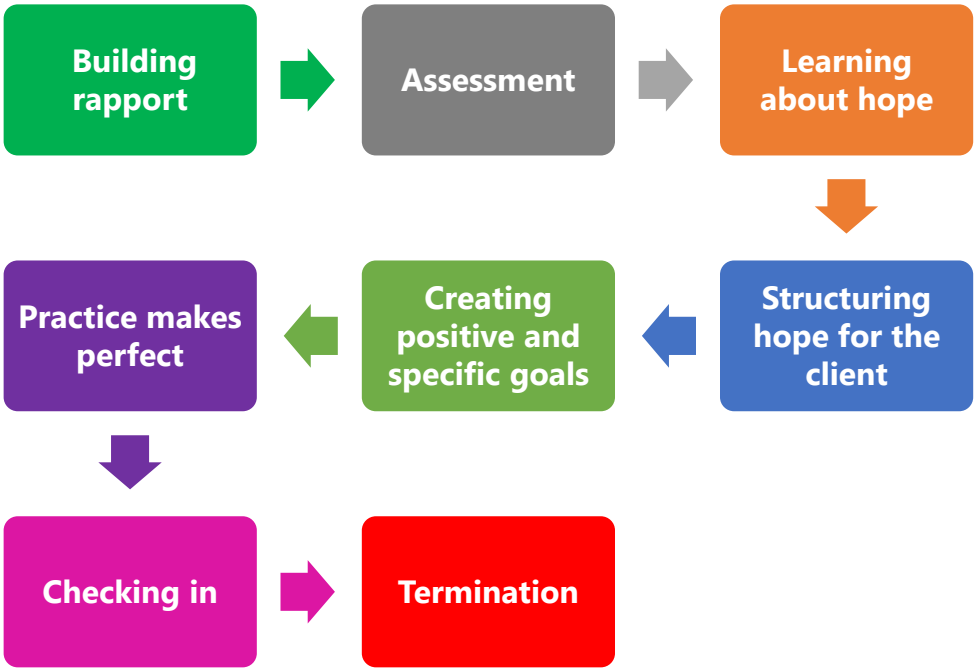
Objective. The purpose of the therapy is to concretely conceptualise goals for adherence and its dimensions, develop strategies to reach these goals, and initiate and sustain the motivation for using those strategies to attain the goal. The goal in this context refers to fostering hope to enhance adherence.

Duration and frequency of session. The duration to complete the therapy is ideally falls between 90–120 days. The therapy is recommended to be provided ones in a week. The duration of each session of the therapy is ideally between 30–45 minutes.

Monitoring mechanism. The process involved in the therapy is cyclical and requires continual assessment by both the participant and the therapist. Participant is asked to report the schedule and maintain checklist to comply with the therapy. Members of the family, preferably primary caregivers of the participant, are asked to maintain a diary to report about the progress of the participant. Health Psychologist is to assess the hope score and also assess the situation of the client from the reported dairies to monitor the progress of the therapy.

Core principles. The core principles of hope therapy are—Finding, Bonding, Enhancing, and Reminding. *Hope finding* strengthens the expectations of the participants regarding their adherence and the potential help that the therapist can render. Reinforcing the participant expectations for help concurrently may instil hope in transformation and enhancement of the therapeutic bond between participant and therapist. *Hope bonding* grounds the participant in a hopeful therapeutic context by the formation of a sound therapeutic alliance. Therapist having high levels of hope are facile in meeting their therapeutic goal of founding an emotionally charged association. Thus recommending a mutually agreed upon goal for engaging in adherence to hypertension is intended outcome. *Hope enhancing* strategies involve enlisting participant in tasks which are designed to: (1) conceptualise the goals of adherence clearly, (2) produce several pathways to achieve adherence, (3) summon the strength to maintain adherence, and (4) reframe unattainable obstacles as challenges to overcome. *Hope reminding* is considered as a feedback loop for the process of therapy. This strategy encourages the participants personally to become their own agents of hope enhancement.

Procedure. There are eight sequential steps to be followed in the therapy. These steps are presented below in diagram and described systematically.



Step 1: Building rapport. The first step of the therapy involves rapport building. The therapist has to generate optimum level of trust of the participants towards him or her.

Step 2: Assessment. After building optimum level of rapport, the therapist has to administer the Hypertension Compliance Scale and Adult Hope Scale on the participant. The therapist tallies the total score and computes subscale scores for the dimensions of adherence and hope. Thus, the baseline scores of adherence and hope are to be calculated.

Step 3: Learning about hope. On the determination of baseline hope score, the therapist discusses the principles of hope theory and its relevance to the process of therapy with the participant highlighting on the positive outcomes of adherence.

Step 4: Structuring hope for the client. The participant has to create a list that comprises of important components related to adherence, which determines those

domains of adherence that are essential to be enhanced in consultation with the therapist. After this, there is a thorough discussion about these domains.

Step 5: Creating positive and specific goals. Workable goals both positive and specific that enhance adherence are compositely identified by the participant with the help of the therapist. These goals related to adherence need to be relevant to the participant and achievable. In addition to this, the participant is helped to develop various pathways for each goal and recognise agency thoughts (thoughts that sustain motivation to accomplish the goal) for each goal to foster adherence. For this, the therapist needs to have brainstorming sessions with the participant. During the brainstorming sessions, the therapist should reinforce and motivate the client to formulate the pathways and identify agency thoughts.

Step 6: Practice makes perfect. On agreement of the formulated goals by both the participant and therapist, the participant needs to visualise and verbalise the steps that enable the participant in reaching those goals. With this practice, the participant and therapist can collaborate on the most effective pathways and agency thinking behind the goals. The therapist has also to have a session with members of the family of the participant, preferably primary caregivers, to explain them about the fixed goals, and they are asked to write a diary about the participant's activities related to the goal.

Step 7: Checking in. On attainment of the goal, the participant is required to report back to the therapist. The participant is asked to bring his diary and the diary maintained by the primary caregivers. The diaries of the participant and primary caregivers can collaboratively enable therapist and client in adjusting or modifying any discrepancies in thinking or actions that hinder the achievement of his/her targeted goals related to adherence.

Step 8: Termination. When the progress of the participant is satisfactory, the therapist administers the Hypertension Compliance Scale and Adult Hope Scale, and the scores are compared with the baseline scores. When the therapist observes that the participant has taken the complete responsibility of implementing the principles of hope therapy in his/her life and integrated adherence to activities of daily living, the formal process of therapy is terminated. Nevertheless, if there is no change occurs during 90 to 120 days, the therapy is terminated by the therapist replacing with a new one or SFBT depending on the decision of the therapist.

Module 2: Solution-focused brief therapy (SFBT)

Solution-focused brief therapy (Iveson, 2002) is a psychotherapeutic approach based on building the solution than solving the problem. Rather than present problems and past causes, it explores current resources and future hopes.

Prerequisites. The age of the participant should be preferably between 30 to 60 years. The participant is to be diagnosed with primary hypertension with low optimism and adherence scores. There should not be any known psychiatric disorder in the participant.

Type of assessment and setting. Individual assessment is essential as the participant is sometimes asked to reveal sensitive aspects of his or her life for better progress in the therapy. The therapy is appropriate to be conducted in a controlled environment, preferably in a clinical or laboratory setting.

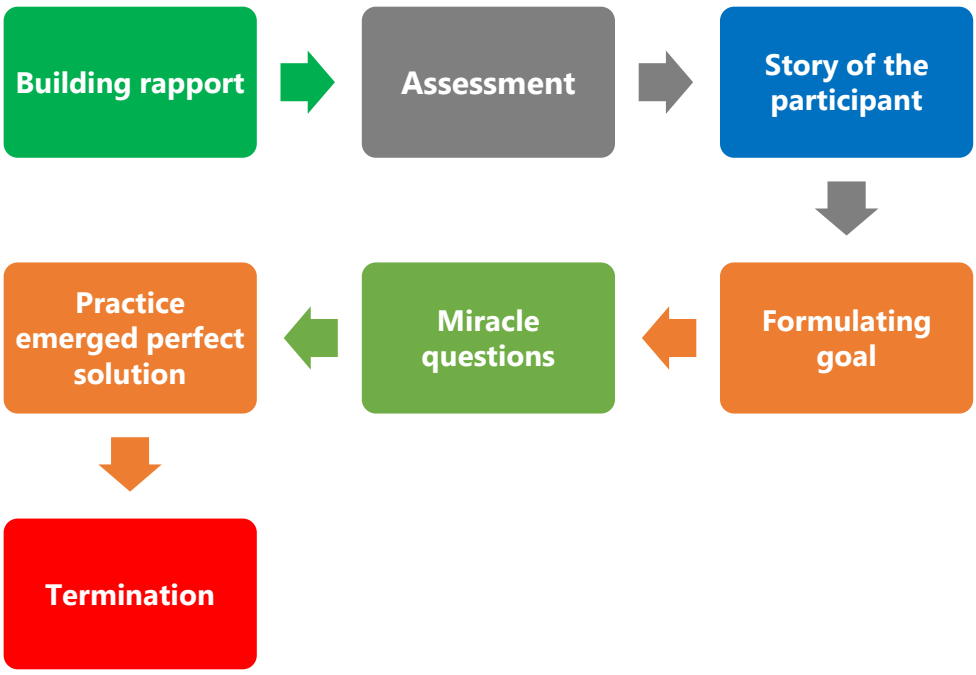
Objective. The purpose of SFBT is to enhance optimism by guiding the participant to focus on a solution for the problem. Here the problem refers to non-adherence of persons with primary hypertension to prescribed treatment regimens.

Duration and frequency of session. The duration to complete the therapy is ideally falls between 3–4 months. The complete therapy is planned for five to seven sessions. The duration of each session is ideally between 40–45 minutes.

Monitoring mechanism. The participant is to be asked to monitor the progress of this therapy by the using self-administered schedule or checklist developed by the therapist. The therapist has to assess the impact of the therapy in each session.

Core principles. The core principle of this therapy is to describe problems related to adherence, formulation of the goal to enhance adherence, miracle question, moving towards a solution related to adherence, and terminating the therapy after finding a solution for optimum adherence to hypertension.

Procedure. There are seven sequential steps followed in the therapy. These steps are presented below in a diagram, and each step is described systematically.



Step 1: Building rapport. Building rapport is a pivotal component in the part of the therapy. This enables both the therapist and participant to establish trust and professional relationship.

Step 2: Assessment: After building rapport with the participant, the therapist has to administer the Hypertension Compliance Scale and Life Orientation Test-Revised on the participant. The therapist has to compute the subscale scores for the dimensions of adherence. Thus, the baseline scores of adherence and optimism are to be determined.

Step 3: Story of the participant. After building rapport with the participant, the therapist has to probe four aspects. The *First* aspect is to find out what the person is expecting to achieve from the session or the therapy. *Second,* the small, mundane and everyday details of the person's life are be explored related to their expectations. The explored expectations need to be related to the adherence-related components among persons with hypertension. *Third,* what the person does or has already done in the past that might contribute to these expectations being realised. *Fourth,* what might be different if the person made one small step towards realising these expectations?

Step 4: Formulating goal. The third step of the therapy aims to formulate goals for enhancing adherence. The goals related to adherence are formulated from the outcome of the second step of the therapeutic process.

Step 5: Miracle questions. After formulating the goals related to adherence in the third step, the therapist has to frame miracle questions which provoke the creative thinking of the participant to emerge with the perfect solution for the goal related to adherence.

Step 6: Practice emerged perfect solution. In this step of the therapy, the participant is to be motivated to follow the steps that emerged as a perfect solution from the fourth step of the therapy to reach the goals related to adherence.

Step 7: Termination. After assessing the holistic effect of the therapy, the therapist has to brief the client about all the phases of the therapy and terminate the therapy with the consent of the client. On the completion of five sessions, if the

improvement is not observed, it is unlikely to work. The therapy has to be terminated by the therapist replacing with a new therapy depending on his or her decision.

Module 3: Mindfulness-based cognitive therapy (MBCT)

Mindfulness is non-judgemental and present moment awareness of what is going on inside and around the participant. This therapy focuses on making the participant aware of his present situation using mindfulness and targeting irrational thoughts present at that context using cognitive therapy.

Prerequisites. Age of the participant should fall between 30–60 years and should be diagnosed with primary hypertension whose scores are high in depression and anxiety in general and specific to those who are prone to relapse of depression. The participant should also score low in adherence.

Type of assessment and setting. Individual assessment is appropriate for the therapy. The clinical setting is a desirable setting for this therapy. Mindfulness can be practised at home environment after attaining the appropriate training in mindfulness.

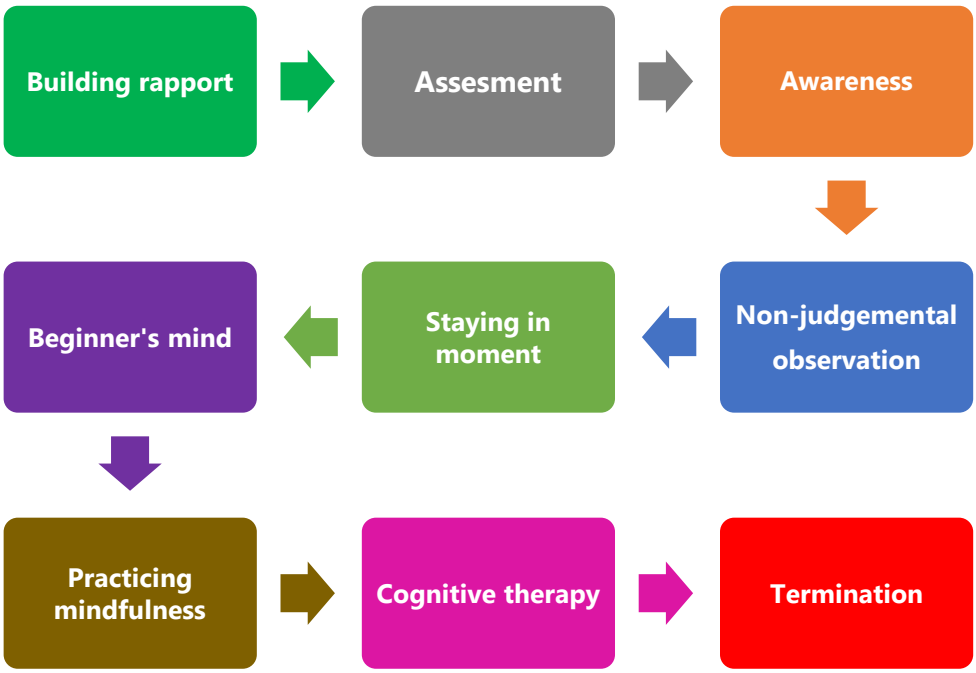
Objective. The purpose of MBCT is to reduce the levels of depression and anxiety in person with primary hypertension. It is an integration of mindfulness meditation and cognitive behaviour therapy.

Duration and frequency of session. The time required for the therapy is ideally between two to five months. The desirable frequency of the sessions for the therapy is six to eight (at least once in a week). Each session lasts for two hours to two and half hours. The participant is required to listen to an audio to practice mindfulness meditation for 45 minutes in six days a week as homework.

Monitoring mechanism. The participant is asked to monitor the therapy by self-administering schedule or checklist developed by the therapist. Health Psychologist has to assess the impact of the therapy in each session.

Core principles. MBCT helps the participant to discover their own thought and mood patterns. MBCT teaches participant to pay attention to the present moment rather than worrying about past or future. The aspects of mindfulness are practised and cultivated in four sessions—awareness, non-judgemental observation, staying in the moment, and beginner's mind. The participants can continue these elements and develop them further throughout their lives.

Procedure. There are nine sequential steps to be followed in the therapy. These steps are presented in the form of the diagram and subsequently, the steps followed in the therapy are described systematically.



Step 1: Building rapport. The first essential step of starting the therapeutic process is building rapport. This step enables participant and therapist to establish a sense of confidentiality. As a result the participant reveals sensitive information related to his or her personal life without any inhibition.

Step 2: Assessment: In this process, the therapist has to administer the Hypertension Compliance Scale and Hospital Anxiety and Depression Scale on the

participant. The therapist has to calculate the total scores and computes subscale scores for the dimensions of adherence and psychological distress—anxiety and depression. Thus, the baseline scores of adherence, anxiety, and depression are to be calculated.

Step 3: Awareness. The therapist should teach the participant to pay attention to only one aspect rather than having it in many aspects at once and making him or her aware of own thoughts, emotions, and bodily sensations as well as external sounds, smells, and tastes.

Step 4: Non-judgemental observation. The therapist has to enable the participant to develop a sense of compassion towards his or her internal experience, making him or her aware of the constant judgements he or she makes about own experiences related to adherence to hypertension. This makes the participant not to step back and experience without labelling them as good or bad.

Step 5: Staying in the moment. The therapist has to enable the participant to focus on present moment rather than focusing on the past and future. The therapist has to train the participant to live patiently in the present moment than rushing to future.

Step 6: Beginner's mind. The participant needs to learn to observe things as they are fresh rather than anticipating from past experiences. The participant has to be open to new possibilities with the help of the therapist.

Step 7: Practising mindfulness. Mindfulness has to be practised by the participant both formally during scheduled session under the supervision of the therapist and informally during everyday activities after gaining appropriate training from the therapist. The following instructions should be given to the participant to practice on mindfulness

(i) Notice internal and external events, try to focus your attention on the things happens around and thoughts, feelings, sensations and images that come up and notice when attention shifts.

(ii) Practise patience with the present moment, stay at this moment, and notice the urge to rush to next thing.

(iii) Try to notice judgements of your experience and yourself. Try to be compassionate in self-awareness of own internal experience. Practise to have your thoughts and feelings without labelling them as good or bad.

(iv) Notice the urge to judge things based on past experiences. Attempt to bring beginner's mind to the experience. Observe things as they are rather than as you think they will be.

(v) Notice the urge to hold on to certain feelings (e.g., happiness) and the urge to push other feelings away (e.g., sadness). Practice to allow thoughts and feelings to come and go as they do.

Moreover, after practising each session of mindfulness, cognitive behaviour therapy is to be administered on the participant.

Step 8: Cognitive therapy. Cognitive therapy targets the faulty beliefs of the participant which make the participant susceptible to anxiety and depression related to hypertension and adherence to treatment regimens. The major components of cognitive therapy are denoted as A (adversities), B (beliefs), C (consequences), D (disputing and debating wrong beliefs), and E (experience of the changed feelings). Adversities, beliefs and consequences related to adherence are addressed as a part of the cognitive therapy. Cognitive therapy helps the participant to dispute and debate with faulty beliefs related to primary hypertension and adherence, and progress to change their feelings with the experience of positive change related to adherence.

Step 9: Termination. The therapist should debrief all the sessions after attaining the goal of the therapy. When the progress of the participant is satisfactory, the therapist administers the Hypertension Compliance Scale and Hospital Anxiety and Depression Scale, and the scores are compared with the baseline scores. The therapist then has to terminate the therapy with the consent of the client after assessing its effectiveness.

Module 4: Biofeedback

Biofeedback is an intervention which combines fields of Physiology and Psychology. The biofeedback technique uses electronics machine to detect and amplify internal body activities to subtle for normal awareness. Once the participants observe these activities, they can try to modify them. It enables the participant to learn immediately about their level of anxiety. As a result they can gradually teach themselves to produce the desirable outcomes in terms of relaxation.

Prerequisites. Age of the participant should fall between 30–60 years and should be diagnosed with primary hypertension whose scores are high in anxiety and depression. The participant should also score low in adherence

Type of assessment and setting. Individual assessment is required. Laboratory setting with biofeedback machine and resting chair are required to proceed with the therapy. Therapy can be administered on only one participant at a time.

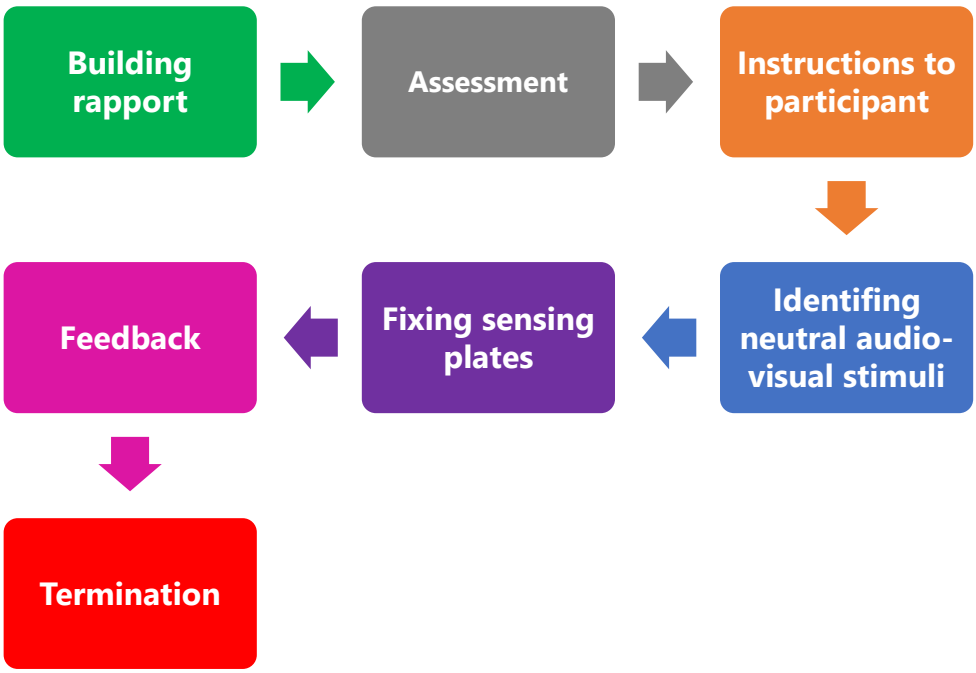
Objective. The purpose of biofeedback is to provide relaxation that helps in reducing anxiety and depression with the feedback given by machine through visual and auditory stimuli.

Duration and frequency of session. The time required for the therapy is for two months. The frequency of the sessions for therapy is at least three times in a week. The duration of each session of the therapy is ideally between 20–30 minutes.

Monitoring mechanism. Feedback is given by machine directly to the participant during therapy. The therapist has to assess the level of relaxation both from the report generated by the biofeedback machine and participants response.

Core principles. Biofeedback works on principle in which it measures physiological response and gives feedback to the participant in the form of toner or meter. Galvanic skin response (GSR) measures changes in the autonomic nervous system by measuring subtle changes in the moisture on hand. Sensing plates of the biofeedback machine are to be fixed to any two fingers (preferably index and middle fingers) to measure GSR. GSR quickly and accurately measures the levels of emotional arousal of the participant. The GSR feedback helps the participant to relax by audio-visual stimuli. Neutral and pleasant stimuli need be presented as per the choice of the participant.

Procedure. There are seven sequential steps are to be followed in the therapy. This steps are presented below in the form of a diagram and is described systematically.



Step 1: Building rapport. Initially, before administering the therapy, the therapist should build rapport with the participant. This helps the participant to follow instructions correctly and quickly.

Step 2: Assessment: After building optimum level of rapport, the therapist has to administer the Hypertension Compliance Scale and Hospital Anxiety and Depression Scale on the participant. The therapist has to calculate the total scores and computes subscale scores for the dimensions of adherence and psychological distress—anxiety and depression. Thus, the baseline scores of adherence, anxiety, and depression are to be calculated.

Step 3: Instructions to the participant. The therapist has to provide necessary instruction to the participant to relax by loosening any tight clothing and ask the participant to remove shoes and belt. The therapist makes the participant sit in a comfortable position in an armchair or any other place having facilities to rest arms and elbows. Lying down posture is not recommended.

Step 4: Identifying audio-visual stimuli. The therapist has to identify a neutral video animation and music as per the choice of the participant.

Step 5: Fixing sensing plates. The GSR sensing plates have to be fixed to either hand of the participant. As mentioned earlier, the sensing plates of the biofeedback machine are to be fixed to any two fingers (preferably index and middle fingers) leaving the thumb of the hand. To find a right position for the participant's arm to rest, let the sensing plates be kept naturally on their sides, as if the participant held a glass. Ask the participant to place his or her index and middle fingers limply on the sensing plates. Instruct the participant not to press down or squeeze as only natural touch is needed.

Step 6: Feedback. Try to set the same relaxation time for the participant every day. The therapist has to start with 10–15 minutes initially, or as long as the participant

feels comfortable. The therapist has to instruct the participant to concentrate on video animation and music to relax. The base value needs to be fixed after 10 seconds of starting the biofeedback machine. Participant also needs to be informed about the feedback given by machine when he or she starts feeling relaxed. The feedback given by machine generally include an object or animal that moves towards its goal with music, when the participant feels relaxed. The feedback in the form of audio-video animation from biofeedback machine reinforces the participant to relax more.

Step 7: Termination. After reaching the target of relaxation regarding time, a number of sessions, and base value of biofeedback, the therapeutic process can be terminated with the consent of the participant. The therapy has to be administered as mentioned under 'Duration and frequency of session'. Nevertheless, if the participant feels discomfort, the session has to be stopped on the basis of the therapist's decision.

Limitations and future directions

Though the study identified major determinants of adherence in persons with primary hypertension, the *first* limitation of the study is that personality has not been included. The future study needs to include personality and other significant psychosocial constructs with a larger representative sample.

Second, the data analysis approach undertaken for qualitative data might not be completely free from the subjective bias of the investigator leading to a chance of error in theory generation. Therefore, it is recommended for the future researcher to use grounded theory design to generate a theory to explain the dynamics of positive living and living pattern amidst chronic illness.

Third, the efficacy of the recommended PPIP is not tested. The future research needs to test the efficacy of PPIP using the experimental design on persons with primary hypertension.

Implications

This study suggests significant implications not only for practising psychologists but also for the researchers specifically from the fields of Health Psychology and Positive Psychology. The implications of the study are three dimensional in nature—assessment and evaluation, intervention, and theory generation and verification.

Regarding assessment and evaluation, one of the key contributions of the study is that the findings would help the psychologists and researchers to identify and predict the major indicators of adherence in persons with primary hypertension. Research instruments could be developed to measure living pattern of the persons with primary hypertension. The evaluation of positive health resource as major determinants has helped in emphasising on better adherence.

This study has discovered the dynamics of positive living amidst chronic illness. This discovery has given rise to a conceptual model of positive living amidst illness that explains the role of living pattern in persons with primary hypertension. The existence of this dynamics would significantly contribute to the development and verification of new theory for combating with chronic illness, thereby living positively with it.

The PPIP has been conceptualised and recommended to nurture the positive health resources, accelerate positive living, and to enhance adherence. The efficacy of the PPIP can be tested and implemented in patients with other chronic illness.

Conclusion

Basing on the sequential mixed method design, the study has identified primarily three major determinants of adherence among persons with primary hypertension, such as anxiety, depression, and hope. Major determinants in respect of each of the four dimensions of adherence—medication, diet, exercise, and self-monitoring—have also been found. The findings also reveal that the percentage of participants under low

adherence category is found to be three-and-half times more than that of the participants under high adherence category, which is alarming. Participants with co-morbid illness have been found to be low in adherence compared to those without any co-morbid illness. The participants, those are happy in life, are found to be high in adherence. From the findings, it is also evident that there is no significant association observed between levels of adherence and other demographic variables—gender, marital status, occupation, duration of illness, and family history of primary hypertension. The study has suggested a conceptual model of positive living amidst illness on the basis of its findings, in which a PPIP has been integrated. Describing the living pattern of persons with primary hypertension, the conceptual model emphasises on six aspects of life with chronic illness—perception, affect, attitude, habit, experience, and management. Basing on the findings and evidence-based studies, the PPIP is recommended involving four modules—hope therapy, SFBT, MBCT, and biofeedback. The PPIP has emphasised primarily on the management of the chronic illness. Because of its impact, the living pattern is likely to be positive that makes the persons progress towards wellness dimension through positive living with happiness amidst illness. Nevertheless, the limitations, future directions, and implications of the study are discussed.

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Table A1

Frequencies and percentages of participants (N = 296)

Variables	*f*	*%*
Gender		
Male	138	46.6
Female	158	53.4
Marital status		
Married	241	81.4
Unmarried	14	4.7
Divorcee	25	8.4
Widow(er)	16	5.4
Duration of hypertension (6 to 52 months)		
One year	96	32.4
Two years	145	49
Three to five years	55	18.6
Family history of hypertension		
Present	126	42.6
Absent	170	57.4
Comorbid illness		
Present	67	22.6
Absent	229	77.4

Table A2

Characteristics of participants (N = 14) in second phase

Name[a]	Age	Gender	Duration of illness[b]	Occupation	Comorbid illness	Duration of interview[c]
Hussain	53	Male	12	Farmer	Nil	35+20
Sruthi	42	Female	18	Housewife	Nil	40
Sita	43	Female	12	Software Engineer	Nil	50
Ramaiah	50	Male	12	Farmer	Diabetes	20+30
Renuka	39	Female	24	Housewife	Nil	40+10
Suresh	42	Male	9	Engineer	Nil	30+10
Rani	58	Female	36	Housewife	Nil	20+25
Prabhakar	54	Male	24	Business	Nil	30+20
Rakesh	52	Male	48	Lecturer	Nil	40
Dinesh	36	Male	20	Lecturer	Nil	50
Nagesh	52	Male	36	Farmer	Nil	40
Ramarao	59	Male	9	Daily wage labour	Nil	50
Venkamma	53	Female	24	Housewife	Nil	40
Veena	45	Female	18	Manager	Nil	50

Note. [a]All names are pseudonyms, [b]Duration of illness is in months, [c]Duration of interview is in minutes

APPENDIX B

Table B1

Summary of simple regression analyses for variables predicting Adherence in persons with primary hypertension (N = 296)

Predictors	*C*	*B*	*SEB*	*β*	*SE*	*F*
Psychological distress						
Anxiety	36.53	.72	.11	.34***	4.17	39.35***
Depression	47.89	-.33	.16	-.12*	4.41	4.23*
Positive health resource						
Hope	22.08	.50	.02	.83***	2.47	658.05***
Optimism	37.06	.42	.06	.37***	4.12	47.13***
Self-efficacy	30.70	2.49	.16	.68***	3.26	252.15***
Demographic correlates						
Age	48.94	-.09	.04	-.13*	4.40	5.27*
Systolic blood pressure	68.82	-.17	.07	-.13*	4.40	5.30*

Note. *C* = Constant, *B* = Unstandardized beta coefficient, *SEB* = Standardized error of beta, *β* = Standardized beta coefficient, *SE* = Standard error of the estimate
*$p < 0.05$, **$p < 0.01$, ***$p < .001$

Table B2

Summary of simple regression analyses for variables predicting Adherence to medication in persons with primary hypertension (N = 296)

Predictors	*C*	*B*	*SEB*	*β*	*SE*	*F*
Psychological distress						
Anxiety	21.14	.20	.08	.15*	.29	6.41*
Positive health resource						
Hope	10.96	.28	.02	.69***	2.12	274.43***
Optimism	19.99	.39	.04	.47***	2.59	83.78***
Self-efficacy	16.22	1.28	.12	.53***	2.48	115.63***
Demographic correlate						
Age	28.51	-.11	.03	-.24***	2.85	17.81***

Note. *C* = Constant, *B* = Unstandardized beta coefficient, *SEB* = Standardized error of beta, *β* = Standardized beta coefficient, *SE* = Standard error of the estimate
*$p < 0.05$, **$p < 0.01$, ***$p < .001$

Table B3

Summary of simple regression analyses for variables predicting Adherence to diet in persons with primary hypertension (N = 296)

Predictors	*C*	*B*	*SEB*	*β*	*SE*	*F*
Psychological distress						
Anxiety	5.48	.20	.04	.29***	1.37	27.80***
Depression	9.91	-.22	.05	-.25***	1.38	19.72***
Positive health resource						
Hope	2.65	.11	.01	.58***	1.17	148.75***
Optimism	5.75	.22	.02	.55***	1.19	129.24***
Self-efficacy	3.86	.69	.06	.58***	1.16	151.61***
Demographic correlates						
Systolic blood pressure	15.67	-.06	.02	-.14*	1.42	5.54*
Family history[a]	7.58	.17	.20	.05	1.43	.76

Note. *C* = Constant, *B* = Unstandardized beta coefficient, *SEB* = Standardized error of beta, *β* = Standardized beta coefficient, *SE* = Standard error of the estimate

[a] Present = 0, Absent = 1

*$p < 0.05$, **$p < 0.01$, ***$p < .001$

Table B4

Summary of simple regression analyses for variables predicting Adherence to exercise in persons with primary hypertension (N = 296)

Predictors	*C*	*B*	*SEB*	*β*	*SE*	*F*
Psychological distress						
Anxiety	6.39	.09	.01	.37***	.49	48.22***
Positive health resource						
Hope	5.46	.04	.00	.62***	.41	180.33***
Optimism	6.87	.07	.01	.44***	.47	71.31***
Self-efficacy	6.26	.21	.02	.49***	.46	92.44***
Demographic correlate						
Comorbid illness[a]	7.32	.15	.07	.12*	.52	4.15*

Note. *C* = Constant, *B* = Unstandardized beta coefficient, *SEB* = Standardized error of beta, *β* = Standardized beta coefficient, *SE* = Standard error of the estimate

[a] Present = 0, Absent = 1

*$p < 0.05$, **$p < 0.01$, ***$p < .001$

Table B5

Summary of simple regression analyses for variables predicting Adherence to self-monitoring in persons with primary hypertension (N = 296)

Predictors	*C*	*B*	*SEB*	*β*	*SE*	*F*
Psychological distress						
Anxiety	4.66	.06	.03	.11*	1.12	3.92*
Depression	3.92	.15	.04	.21***	1.09	13.40***
Positive health resource						
Hope	8.00	-.06	.01	-.39***	1.03	52.71***
Optimism	6.43	-.12	.02	-.39***	1.03	53.59***
Self-efficacy	7.81	-.44	.05	-.48***	.98	87.65***
Demographic correlates						
Systolic blood pressure	-3.57	.06	.02	.19***	1.09	11.65***
Comorbid illness[a]	5.70	-.46	.15	-.17**	1.10	9.30**

Note. *C* = Constant, *B* = Unstandardized beta coefficient, *SEB* = Standardized error of beta, *β* = Standardized beta coefficient, *SE* = Standard error of the estimate

[a] Present = 0, Absent = 1

*$p < 0.05$, **$p < 0.01$, ***$p < .001$

Institute Ethics Committee, University of Hyderabad

Justice Rangarajan
Chairperson

Prof. Geeta K. Vemuganti
Member Secretary

Decision Letter of Institute Ethics Committee,

IEC No Application No:	UH/IEC/2016/122(R-1)	**Date of review**	9-9-2015
Project Title:	**Major determinants of clinical adherence among patients with primary hypertension**		
Principal Investigator/ Co-PI:	**K.Vincent** **Dr.Suvashisa Rana**		
Participating Institutes if any	Health Center, Hyderabad	**Approval from Participating Institute**	yes
Documents received and reviewed	Protocol update		
In case of renewal submission of update	27-9-16		
Decision of the IEC:	Approved for renewal Duration : One year from date of approval		
Any other Comments Requirements for conditional Approval	----------		
Members Present	Sri Justice Rangarajan, Prof.Geeta K.Vemuganti,Dr.Mahadev Kalyankar, Prof.Purendra Prasad,Prof. Meena Hariharan, Dr.M.Varalakshmi, Mrs.. Jamila Nishat, Amita &Mrs.Nagalakshmi		

Please note:

a. Any amendments in the protocol must be informed to the Ethics committee and fresh approval taken.
b. Any serious adverse event must be reported to the Ethics Committee within 48 hours in writing (mentioning the protocol No. or the study ID)
c. Any advertisement placed in the newspapers, magazines must be submitted for approval.
d. The results of the study should be presented in any of the academic forums of the hospital annually.
e. If the conduct of the study is to be continued beyond the approved period, an application for the same must be forwarded to the Ethics Committee.
f. It is hereby confirmed that neither you nor any of the members of the study team participated in the decision making/voting procedures.

Chairperson

(Justice Rangarajan)

Member Secretary

(Prof. Geeta K Vemuganti)
Member Secretary
Institutional Ethics Committee (IEC)
School of Medical Sciences
University of Hyderabad
Hyderabad-500046.

Address : School of Medical Sciences, University of Hyderabad, C.R. Rao Road, Gachibowli, Hyderabad - 500 046.
Tel (O) : +91-040-23134781 / 23013279
E-mail : iec_uoh@uohyd.ernet.in, deanmd@uohyd.ernet.in

APPENDIX C

INFORMED CONSENT FORM

University of Hyderabad
Centre for Health Psychology

Please read this informed consent form carefully. Ask as many questions as you like before you decide whether you want to participate in this research study. You are free to ask questions at any time before, during, or after your participation in this research.

Title of the Study: Major determinants of clinical adherence among patients with primary hypertension

Researchers: Mr. Kallavarapu Vincent (PhD Research Scholar) **and** Dr. Suvashisa Rana (Assistant Professor)

Organization: Centre for Health Psychology, University of Hyderabad, Central University Campus PO, Hyderabad-500046, India. Telephone No. +91-40-23134790

Description of the study: The main purpose of this study is identify the major determinants of clinical adherence among patients with primary hypertension.

In order to participate in this research study, it is necessary that you give your consent. By signing this informed consent statement you are indicating that you understand the nature of the research study and your role in that research and that you agree to participate in the research. When filling out questionnaires/scales or answering to the questions asked, you may come across a question or answer choice that you find unpleasant, upsetting or otherwise objectionable. For instance, a few of the questions may cause you to think about negative emotional states. You may also feel that you have performed poorly, but there is no right or wrong answer. You will be asked to provide confidential information about yourself. When your participation is complete, you will be given an opportunity to learn about this research, which may be useful to you in understanding yourself and others. You will have an opportunity to contribute to psychological science by participating in this research. There is no known or possible risks for you in this study.

Please consider the following points before signing this Informed Consent Form:

1. I understand that I am participating in this psychological research.

2. I understand that my identity will not be linked with my data, and that all information I provide will remain confidential. Results of the study, including all collected data, may be published in investigators' thesis and in possible future journal articles and professional presentations, but my name or any identifiable references to me will not be included.

3. I understand that I will be provided with an explanation of the research in which I participate. Any questions I may have about this study will be answered by Mr. Kallavarapu Vincent, PhD Research Scholar, Centre for Health Psychology, University of Hyderabad, Central University Campus PO, Hyderabad-500046, India. Telephone No. +91-40-23134790, E-mail: vincent.kallevarapu@gmail.com.

4. I understand that I will not be paid any financial compensation for my participation, nor will I incur any costs as a result of my participation in this research.

5. I understand that the participation in research is voluntary. If I decide now or at any point to withdraw this consent or stop participating, I am free to do so at no penalty to myself.

I understand the above information and consent to participate in this study voluntarily. I also declare that I am above 18 years of age. I understand that I will receive a copy of this form.

_____
Signature of the participant
NAME: _____Date: _ _ / _ _ / _ _ _ _

_____
Signature of the Co-researcher
NAME: Dr. SUVASHISA RANA
Date: _ _ / _ _ / _ _ _ _

_____
Signature of the Principal Researcher
NAME: Mr. KALLAVARAPU VINCENT
Date: _ _ / _ _ / _ _ _ _

University of Hyderabad
Centre for Health Psychology

ID:

Instructions: There are 7 Sections (A, B, C, D, E, F, G) mentioned below. The statements in each section explain different dimensions of a person's life. In each section, different scales are mentioned with digits. These digits are written on the right side of each statement. Please read each statement carefully. Encircle the digit to the right of each that you think is appropriate for you. There is no right or wrong answer for any of the statement. Therefore, please write your original response honestly. Your responses will be used only for the purpose of research and your identity from every angle will be kept confidential.

సూచనలు: ఈ క్రింది భాగంలో 7 విభాగాలు (A, B, C, D, E, F, G) ఉన్నాయి. ప్రతి విభాగంలో వాక్యాలు మనిషి జీవితం యొక్క వివిధ కోణాలు వివరిస్తాయి. ప్రతి విభాగంలో, వివిధ అంకెలలో కూడిన వివిధ మాపనులు ఉన్నాయి. ప్రతివాక్యానికి కుడివైపు కొన్ని అంకెలు ఉన్నాయి. ప్రతి వాక్యము జాగ్రత్తగా చదవండి. మీకు కచ్చితంగా సరియినది అనిపించే అంక చుట్టూ వృత్తం (సున్నా) చుట్టండి. ఎటువంటి సరైన లేదా తప్పు సమాదానం ఉండదు. అందువల్ల నిజాయతిగా మి అసలు స్పందన వ్రాయండి. మీ స్పందనలు పరిశోధన యొక్క ప్రయోజనం కోసం మాత్రమే ఉపయోగపడతాయి. మి గుర్తింపు అన్నికోణాల నుండి రహస్యముగా ఉంచబడుతుంది.

Section A / విభాగం A

Scale/ మాపనులు

Do not Know/ Not applicable/ తెలియదు/ నాకు వర్తించదు	**0**
All the time/ ఎల్లప్పుడు	**1**
Most of the time/ ఎక్కువ సార్లు	**2**
Some of the time/ కొన్ని సార్లు	**3**
None of the time/ ఎప్పుడు జరగదు	**4**

1. How often do you forget to take your medicine for high blood pressure (HBP)? 1. ఎంత తరచుగా మీరు మీ అధిక రక్తపోటు(HBP) మందులు తీసుకోవడం మర్చిపోతారు?	0	1	2	3	4
2. How often do you decide not to take your medicine? 2. మీరు ఎంత తరచుగా మీ మందు తీసుకోకూడదని నిర్ణయిస్తారు?	0	1	2	3	4
3. How often do you eat salty food? 3. మీరు ఎంత తరచుగా కొంచెము ఉప్పుఎక్కువగా కలిగిన ఆహారము తింటారు?	0	1	2	3	4
4. How often do you eat fast food? 4. మీరు ఎంత తరచుగా ఫాస్ట్ ఫుడ్ తింటారు?	0	1	2	3	4
5. How often do you add extra salt to your food? 5. మీరు ఎంత తరచుగా మీ ఆహారములో అదనముగా ఉప్పు కలుపుకుంటారు?	0	1	2	3	4
6. How often do you get the next appointment before you leave the clinic? 6. ఎంత తరచుగా మీరు క్లినిక్ వదిలి వెళ్ళే ముందు మీరు తదుపరి అపాయింట్మెంట్ తిసుకుంటారు?	0	1	2	3	4
7. How often do you run out of HBP medicines? 7. మీకు ఎంత తరచుగా HBP మందులు లేని పరిస్థితి ఎదురవుతుంది?	0	1	2	3	4
8. How often do you miss taking your medicine because you feel better? 8. మీరు ఆరోగ్యముగా ఉన్నారు అని భావించి, మందులు తీసుకోకపోవడం ఎంత తరచుగా జరుగుతుంది?	0	1	2	3	4
9. How often do you miss taking your medicine because you feel sick?	0	1	2	3	4

9. మీరు అనారోగ్యముగా అనిపిస్తున్నందువల్ల మందులు వేసుకోకపోవడం ఎంత తరుచుగా జరుగుతుంది?					
10. How often do you take someone else's HBP medicine? 10. ఎంత తరచుగా మీరు వేరొకరి HBP మందులు తిసుకుంటారు?	0	1	2	3	4
11. How often you just don't bother about taking your HBP medicine? 11. ఎంత తరచుగా మీరు మి HBP మందులు తీసుకోవడం గురించి అసలు పట్టించుకోరు?	0	1	2	3	4
12. How often do you check blood pressure level? 12. మీరు ఎంత తరచుగా రక్తపోటు స్థాయిని పరీక్షించుకుంటారు?	0	1	2	3	4
13. How often do you do the prescribed exercises e.g. morning walk? 13. మీరు ఎంత తరచుగా సూచించిన వ్యాయామాలు చేస్తారు ఉదా: ఉదయం నడక?	0	1	2	3	4
14. How often do you substitute your exercise with household chores/ running errands? 14. ఎంత తరచుగా మి వ్యాయామానికి బదులుగా ఇంటి పనులు చేస్తారు?	0	1	2	3	4
15. How often do you cut short the duration of your exercise? 15. ఎంత తరచుగా మీరు మి వ్యాయామం వ్యవధిని తగ్గిస్తారు?	0	1	2	3	4

Section B/ విభాగం B

1. I feel tense or 'wound up'

- ☐ Most of the time
- ☐ A lot of the time
- ☐ From time to time, occasionally
- ☐ Not at all

1. నాకు ఆందోళనగా లేదు ఒత్తిడిగా అనిపిస్తుంది

- ☐ అత్యధిక సమయం
- ☐ ఎక్కువ సమయం
- ☐ తరుచుగా / ఎప్పటికప్పుడు
- ☐ అసలు లేదు

2. I still enjoy the things I used to enjoy:

- ☐ Definitely as much
- ☐ Not quite so much
- ☐ Only a little
- ☐ Hardly at all

2. నేను ఇంతకి ముందు ఆనందించే విషయాలను ఇప్పటికి/ ఇప్పుడు కూడా ఆనందిస్తున్నాను.

- ☐ కచ్చితంగా అప్పటిలాగే
- ☐ అంతగా ఆనందించట్లేదు
- ☐ కొద్దిగా మాత్రమే
- ☐ అసలు ఏ విషయాలను ఆనందించట్లేదు

3. I get a sort of frightened feeling as if something awful is about to happen:

- ☐ Very definitely and quite badly
- ☐ Yes, but not too badly
- ☐ A little, but it doesn't worry me
- ☐ Not at all

3.ఏదో జరగకూడనది ఒక విధమైన జరగబోతున్నదని భయంగా అనిపిస్తుంది.

- ☐ ఖచ్చితముగా మరియు తీవ్రముగా
- ☐ అవును, కాని అంత తీవ్రముగా కాదు
- ☐ కొంతవరకు కాని నాకు ఆందోళన కలిగించదు
- ☐ అసలు ఎమీ లేదు

4. I can laugh and see the funny side of things:

- ☐ As much as I always could
- ☐ Not quite so much now
- ☐ Definitely not so much now
- ☐ Not at all

4. నేను నవ్వగలను, విషయాలలో హాస్యకోణం చూడగలను

- ☐ ఎప్పుడు ఎంత చేయగలనో అంతగానే చేయగలను
- ☐ ఇంతకు మునుపు ఉన్నంత ఇప్పుడు లేదు
- ☐ కచ్చితంగా అంతగా ఇప్పుడు అనందించలేను
- ☐ అసలు లేదు

5. Worrying thoughts go through my mind:

- ☐ A great deal of the time
- ☐ A lot of the time
- ☐ From time to time, but not too often
- ☐ Only occasionally

5. ఆందోళన కలిగించే విషయాలను గురించి ఆలోచిస్తుంటాను.

- ☐ అత్యధిక సమయం
- ☐ ఎక్కువ సమయం
- ☐ అప్పుడప్పుడు కాని మరి తరుచుగా కాదు
- ☐ ఎప్పుడో ఒకసారి/ అడపాదడపా

6. I feel cheerful:

- ☐ Not at all
- ☐ Not often
- ☐ Sometimes

6. నాకు ఉల్లాసంగా / ఉత్సాహముగా అనిపిస్తుంటుంది.

- ☐ అసలు అనిపించదు
- ☐ తరచుగా కాదు
- ☐ కొన్నిసార్లు

☐ Most of the time

☐ ఎక్కువ సందర్భాలలో

7. I can sit at ease and feel relaxed:

☐ Definitely

☐ Usually

☐ Not Often

☐ Not at all

7. నేను కులాసాగా / ప్రశాంతముగా ఉండగలను.

☐ ఖచ్చితముగా

☐ సాధారణముగా

☐ తరుచుగా కాదు

☐ అసలే కాదు

8. I feel as if I am slowed down:

☐ Nearly all the time

☐ Very often

☐ Sometimes

☐ Not at all

8. నేను ఈ మధ్య నెమ్మదిగా అయ్యానని భావిస్తున్నాను

☐ దాదాపుగా ఎప్పుడు

☐ తరచుగా

☐ కొన్నిసార్లు

☐ అసలు లేదు / కాదు

9. I get a sort of frightened feeling like 'butterflies' in the stomach:

☐ Not at all

☐ Occasionally

☐ Quite Often

☐ Very Often

9. నాకు ఏదో భయంగా కడుపులో ఏవో తిరుగుతున్నట్లు అనిపిస్తుంది

☐ అసలు అనిపించదు

☐ అడపదడప ఎప్పుడైనా అనిపిస్తుంది

☐ తరచుగా అనిపిస్తుంది

☐ చాలా తరచుగా

10. I have lost interest in my appearance:

☐ Definitely

☐ I don't take as much care as I should

☐ I may not take quite as much care

☐ I take just as much care as ever

10. నాకు రూపము మీద నాకు ఆసక్తి తగ్గింది

☐ కచ్చితంగా

☐ నేను తిసుకోవల్సినంత జాగ్రత్త తీసుకొను

☐ జాగ్రత్త తిసుకోవట్లేదేమో

☐ ఎప్పట్లాగే తగినంత జాగ్రత్త తీసుకుంటున్నాను

11. I feel restless as I have to be on the move:

☐ Very much indeed

☐ Quite a lot

☐ Not very much

☐ Not at all

11. కదులుతూ ఉండాలి కాబట్టి నీకు అసహనంగా అనిపిస్తుంది.

☐ చాల ఎక్కువగా

☐ ఎక్కువగానే అనిపిస్తుంది

☐ అనిపించదు

☐ అసలు అనిపించదు

12. I look forward with enjoyment to things:

☐ As much as I ever did

☐ Rather less than I used to

☐ Definitely less than I used to

☐ Hardly at all

12. నేను చేయవలసిన విషయాలను గురించి ఆనందంతో ఎదురుచూస్తాను

☐ ఎప్పటిలాగే

☐ ఇంతకు ముందు కంటే కొంచం తక్కువగా

☐ అంత తరుచుగా జరగదు

☐ దాదాపుగా లేదు

13. I get sudden feelings of panic:

- ☐ Very often indeed
- ☐ Quite often
- ☐ Not very often
- ☐ Not at all

13. నాకు ఆకస్మికముగా తీవ్ర, భయాందోళన కలుగుతుంది.

- ☐ నిజంగా చాలా తరచుగా
- ☐ తరచుగానే
- ☐ తక్కువగా
- ☐ అసలు లేదు

14. I can enjoy a good book or radio or TV program:

- ☐ Often
- ☐ Sometimes
- ☐ Not often
- ☐ Very seldom

14. మంచి పుస్తకం చదవడాన్ని / రేడియో వినడాన్ని/ టి. వి చూడడాన్ని, నేను ఆస్వాదించగలను

- ☐ తరచుగా
- ☐ కొన్నిసార్లు మాత్రమే
- ☐ తరచుగా కాదు
- ☐ చాలా అరుదుగా

Section C/ విభాగం C

Scale/ మాపనులు	Definitely False/ కచ్చితంగా అబద్ధం	**1**
	Mostly False/ అధికంగా అబద్ధం	**2**
	Somewhat False/ కొంతవరకు అబద్ధం	**3**
	Slightly false/ తక్కువగా అబద్ధం	**4**
	Slightly True/ తక్కువగా నిజం	**5**
	Somewhat True/ కొంతవరకు నిజం	**6**
	Mostly True/ అధికముగా నిజం	**7**
	Definitely True/ కచ్చితంగా నిజం	**8**

1. I can think of many ways to get out of jam. 1. నేను ఎందులోనైనా ఇరుక్కుపోతే దాని నుండి బయటకు రావటానికి అనేక మార్గాలు ఆలోచించగలను	1	2	3	4	5	6	7	8
2. I energetically pursue goals. 2.నేను శక్తివంతంగా అందకొగాలను .	1	2	3	4	5	6	7	8
3. I feel tired most of the time. 3. ఎక్కువ సమయం అలసటగా అనిపిస్తుంది.	1	2	3	4	5	6	7	8
4. There are lots of ways around any problem. 4. ఏ సమస్యకైనా పలు మార్గాలు ఉన్నాయి.	1	2	3	4	5	6	7	8
5. I can easily downed in an argument. 5. నేను సులభంగా వాదనలో ఓడి పోతాను.	1	2	3	4	5	6	7	8
6. I can think of many ways to get the things in life that are important to me 6.నేను నా జీవితంలో ముఖ్యమైన విషయాలు పొందడానికి అనేక మార్గాలు ఆలోచించగలను	1	2	3	4	5	6	7	8
7. I worry about my health. 7. నా ఆరోగ్యం గురించి ఆందోళనచెందుతాను.	1	2	3	4	5	6	7	8
8. Even when others get discouraged, I know I can find a way to solve problem. 8. ఇతరులు నిరుత్సాహ పడినప్పుడు కూడా, నేను సమస్యను పరిష్కరించడానికి ఒక మార్గం కనుగొనగలను..	1	2	3	4	5	6	7	8
9. My past experiences have prepared me well for my future. 9. నా గత అనుభవాలు నా భవిష్యత్ కోసం నన్ను బాగా సిద్ధం చేశాయు.	1	2	3	4	5	6	7	8
10. I've been pretty successful in life. 10. నేను జీవితంలో బాగా విజయవంతం అయ్యాను.	1	2	3	4	5	6	7	8
11. I usually find myself worrying about something. 11. నేను సాధారణంగా ఏదో ఒక విషయం గురించి విచారిస్తుంటాను అని నాకు అనిపిస్తుంది.	1	2	3	4	5	6	7	8
12. I meet the goals that I set for myself. 12. నా కోసం నేను ఏర్పరచుకున్న లక్ష్యాలను నేను చేరుకోగలను.	1	2	3	4	5	6	7	8

Section D/ విభాగం D

Scale/ మాపనులు	I agree a lot/ నేను చాలావరకు అంగీకరిస్తాను	**5**
	I agree a little/ నేను కొంతవరకు అంగీకరిస్తాను	**4**
	I neither agree nor disagree/ నేను అంగీకరించను , వ్యతిరేకించను	**3**
	I disagree a little/ నేను కొంతవరకు వ్యతిరేకిస్తాను	**2**
	I disagree a lot/ నేను చాలా వరకు వ్యతిరేకిస్తాను	**1**

1. In uncertain times, I usually expect the best. 1. కొన్ని సార్లు , నేను ఉత్తమాన్ని/ ఉత్తమమైనదాన్ని ఆశిస్తాను	1	2	3	4	5
2. It's easy for me to relax. 2. నాకు విశ్రాంతి తీసుకోవడము సులభం/ తేలికైన విషయం	1	2	3	4	5
3. If something can go wrong for me, it will. 3. నాకు ఏదైనా చెడు జరగాల్సిఉంటే, అలా జరుగుతుంది.	1	2	3	4	5
4. I am always optimistic about my future. 4. నేను ఎప్పుడూ, నా భవిష్యత్తు గురించి ఆశతో ఉంటాను.	1	2	3	4	5
5. I enjoy my friends a lot. 5. నేను నా స్నేహితుల సాన్నిహిత్యాన్ని బాగా ఆస్వాదిస్తాను.	1	2	3	4	5
6. It's important for me to keep busy. 6. తీరికలేకుండ ఉండడము నాకు ముఖ్యం.	1	2	3	4	5
7. I hardly ever expect things to go my way. 7. విషయాలు నాకు అనుగుణంగా జరుగుతాయని నేను పెద్దగా ఆశించను.	1	2	3	4	5
8. I don't get upset too easily. 8. నేను అంత సులభంగా విచారానికి గురికాను.	1	2	3	4	5
9. I rarely count on good things happening to me. 9. నేను నాకు మంచి విషయాలు జరగడాన్ని అరుదుగా లెక్కిస్తాను	1	2	3	4	5
10. Overall, I expect good things to happen to me than bad. 10. మొత్తంమీద, నేను నాకు చెడు కంటే మంచి విషయాలు జరుగుతాయని ఆశిస్తాను.	1	2	3	4	5

Section E/ విభాగం E

Scale/ మాపనులు	Not at all Confident / అస్సలు నమ్మకం లేదు	1	2	3	4	5	6	7	8	9	10	Totally Confident/ పూర్తిగా నమ్మకం ఉంది

1. How confident are you that you can keep the fatigue caused by our disease from interfering with things you want to do? 1 బి.పి వలన కలిగే అలసట నేను చేయాల్సిన పనులని అడ్డుకోకుండా చూడగలను	1	2	3	4	5	6	7	8	9	10
2. How confident are you that can keep the physical discomfort or pain of your disease from interfering with the things you want to do? 2. బి.పి వలన కలిగే శారీరక బాధ/ నొప్పి నేను అనుకొన్న పనులకి అడ్డం రాకుండా చూడగలను	1	2	3	4	5	6	7	8	9	10
3. How confident are you that you can keep the emotional distress caused by your disease from interfering with the things you want to do? 3. అనారోగ్యం వలన మనసు బాగా కలత చెందినప్పుడు దాని ప్రభావం దైనందిన జీవితంపై పడకుండా నిగ్రహించుకోగలను	1	2	3	4	5	6	7	8	9	10
4. How confident are you that you can keep any other symptoms or health problems you have from interfering with the things you want to do? 4. ఇతర అనరోగ్యసమస్యలు,లక్షణాలు నేను అనుకొన్న పనులకు అడ్డురాకుండా చూడగలను	1	2	3	4	5	6	7	8	9	10
5. How confident are you that you can do the different tasks and activities needed to manage your health condition so as to reduce you need to see a doctor? 5. నా బి.పి లో మార్పులు వచ్చినప్పుడు డాక్టర్ ని సంప్రదించే అవసరం లేకుండా కొన్ని చర్యలతో బి.పి ని నియంత్రించగలను	1	2	3	4	5	6	7	8	9	10
6. How confident are you that you can do things other than just taking medication to reduce how much you illness affects your everyday life? 6. కేవలం మందుల ద్వారానే కాకుండా ఇతర మార్గాల ద్వారా నా బి.పి ని నియంత్రించుకోగలను	1	2	3	4	5	6	7	8	9	10

Section F/ విభాగం F

Personal Details/ వ్యక్తిగత వివరాలు:

1. Name/ పేరు : _____

2. Gender/లింగం : ☐ Female, స్త్రీ ☐ Male, పురుష

3. Age/ వయస్సు : _____

4. Marital status/ వైవాహిక స్థాయి : _____

5. Occupation/ వృత్తి : _____

6. Duration of hypertension/ రక్తపోటు ఎప్పటినుండి : _____ Years/ సంలు

7. Family history of hypertension/రక్తపోటు కుటుంబ చరిత్రలో : ☐ Yes ఉంది ☐ No లేదు

8. Comorbid Illness/ ఇతర అనుబంధ అనారోగ్యాలు : ☐ Yes ఉంది ☐ No లేదు

9. BP readings/ రక్త పోటు స్థాయి : SBP _____ DBP _____

10. Are you happy in your life? / మీరు మీ జీవితంలో సంతోషంగా ఉన్నారా? ☐ Yes ఉన్నాను ☐ No లేను

Section G/ విభాగం G

In-depth interview protocol

Major focus

1. Life style/ జీవన శైలి

2. First experience with the illness/ అనారోగ్యంతో మొదటి అనుభవం

3. Experience of living with the illness/ అనారోగ్యంతో జీవన అనుభవం

4. Reasons of adherence (high or low)/ కట్టుబడి (అధిక లేదా తక్కువ) యొక్క కారణాలు

5. Measures to fight with the illness for better living/ మెరుగైన జీవన శైలికై అనారోగ్యంతో పోరాడటానికి తీసుకుంటున్న చర్యలు

Major Determinants of Adherence among Persons with Primary Hypertension

by Vincent Kallavarapu

Major Determinants of Adherence among Persons with Primary Hypertension

ORIGINALITY REPORT

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PRIMARY SOURCES

1	Vincent, Kallavarapu, Suvashisa Rana, and Durgesh Nandinee. "'Living Through Challenges is a New Opportunity': An Interpretative Phenomenological Analysis on Persons with Cardiovascular Disease", Psychological Studies, 2015. Publication	<%1
2	"Strategies for Accentuating Hope", Positive Psychology in Practice, 2015. Publication	<%1
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4	Nsamenang, Sheri A., and Jameson K. Hirsch. "Positive psychological determinants of treatment adherence among primary care patients", Primary Health Care Research & Development, 2014. Publication	<%1

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Psychol Stud (January–March 2015) 60(1):33–40
DOI 10.1007/s12646-015-0301-2

RESEARCH IN PROGRESS

'Living Through Challenges is a New Opportunity': An Interpretative Phenomenological Analysis on Persons with Cardiovascular Disease

Kallavarapu Vincent · Suvashisa Rana · Durgesh Nandinee

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Abstract This study attempted to explore and understand the lived experiences of the persons with cardiovascular disease throughout their lives, and identify specific positive aspects that acted as catalysts for their positive living during the illness. Eight persons (aged 29–58), both men and women, were interviewed. They had lived with the disease for two to 12 years. Transcripts were explored through Interpretative Phenomenological Analysis. Data analysis revealed two superordinate themes, such as lived experiences and feeling in life, and dynamics of positive living during illness. The lived experiences of the persons with cardiovascular disease help us to understand their psychological critical life situations and the strategies they follow to salvage their lives by transforming themselves from negative to positive. The findings bring a new insight, and the implications and shortcomings are discussed.

Keywords Qualitative approach · Interpretative phenomenological analysis · Cardiovascular disease · Positive living

Introduction

Cardiovascular diseases (CVD) are globally a major concern under chronic diseases—noncommunicable illnesses that are prolonged in duration, do not resolve spontaneously, and are rarely cured completely (Centers for Disease Control and Prevention 2009). The common CVD—coronary heart disease, stroke, congestive heart failure, and peripheral artery disease—are now increasingly prevalent in developing countries as infectious diseases are better controlled (Luepker 2011). Most individuals who develop CVD have at least one of the traditional CVD risk factors—smoking, high blood pressure, high cholesterol, and diabetes (Greenland et al. 2003). However, myriad research studies argue that in addition to these, other factors—biological, and psychosocial play significant role in the development and progress of this chronic disease epidemic. Patients with CVD have independent association with recurrent cardiac events and mortality over the future years (Barth et al. 2004).

Psychological negative attributes, such as anger (Williams et al. 2002), hostility (Everson et al. 1997), anxiety (Phillips et al. 2009), depression (Celano and Huffman 2011), and type A personality characteristics (Mark et al. 2012) are instrumental in the development and progression of CVD. Moreover, depressive symptoms in CVD patients are common (Rudisch and Nemeroff. 2003) and persistent (Kaptein et al. 2006). Major depressive disorder, current depressive symptoms, and a history of depression have been associated with increased risk of CVD morbidity and mortality (Everson-Rose and Lewis 2005). It is also observed that socially isolated individuals typically have higher rates of CVD morbidity (Orth-Gomer et al. 1998) and mortality (Brummett et al. 2001). In employees, positive associations are perceived between overall job strain and CVD morbidity and mortality (Kuper and Marmot 2003).

Research findings suggest that psychological positive attributes and positive environment conjointly act as a buffer

K. Vincent (✉)
Centre for Health Psychology, University of Hyderabad, Central University Campus PO, Gachibowli Hyderabad 500046, India
e-mail: vincent.kallevarapu@gmail.com

S. Rana · D. Nandinee
Centre for Health Psychology, University of Hyderabad, Hyderabad, India

against the vulnerability of the person towards CVD. Optimism and other positive emotions have been associated with superior cardiovascular outcomes in persons with heart disease (Denollet et al. 2008). Furthermore, the association between positive attributes and cardiac outcomes has been independent of negative psychological states in many cases, suggesting that cardiovascular benefits associated with positive attributes may be more than the absence of distress and disorder (Davidson et al. 2010). Emotionally supportive relationships characterized by high degrees of caring, sympathy, understanding, and support have shown to be cardio-protective (Rosengren et al. 2004). However, optimism, one of the positive attributes, is most consistently linked to cardiovascular health (Boehm et al. 2011; Rasmussen et al. 2009). Research has found that dispositional optimism is independently associated with reduced readmissions of the patients to hospitals following coronary artery bypass graft surgery, after controlling for age, education level, and serum cholesterol level (Scheier et al. 1999). Greater emotional vitality—a sense of vitality, positive well-being, and emotional control—is observed to be related to lower risk for incident of CVD (Kubzansky and Thurston 2007). Emotional vitality, in addition to optimism, is also independently associated with reduced risk of incident of heart disease (Boehm et al. 2011). Positive affect has shown associations with less reactivity of blood pressure and heart rate to stress and faster cardiovascular recovery from the induction of negative emotional states including fear and sadness (Dowd et al. 2010).

Though the ongoing research in the field of Health Psychology focuses on the relevance of positive attributes of an individual which act as buffer against the growth and progression of CVD, a few qualitative research studies have been conducted. In India, where the prevalence of CVD takes an upward trend, more emphasis is given to the biomedical approach focusing more on the physiological components of the disease. Many studies have been conducted to understand the outcome, i.e., the CVD, than the process, under which CVD incubates, develops, and progresses. Hence, this study was conceptualized to understand the process of the development of the CVD from the biopsychosocial perspective. Basing on the qualitative approach and guided by the principles of interpretative phenomenological analysis (IPA), this study attempted to explore and understand the lived experiences of the persons with CVD throughout their lives, and identify specific positive aspects or protective factors that acted as catalysts for their positive living during the illness.

Basing on the philosophical underpinning for phenomenology, this study involved IPA. As delineated by Churchill and Richer (2000), phenomenology is the disclosure of things or events as they occur for someone, with the ultimate aim of uncovering and articulating the modes of presence that co-constitute, and thus make possible, the perception of all things and events. Churchill (2000) states that the term 'phenomenological' is often used by psychologists to refer simply to the subjective point of view as well as to the world as seen through the perspective of a particular person. According to him, a psychological phenomenon is understood not as an event 'in itself' but rather as something that occurs 'for someone'. Again to quote Churchill (2000, p. 164):

> The hallmark of the phenomenological method in psychology is its *thematization of how an individual co-constitutes the world of experience* that has been described in self-report data, therapy transcripts or other forms of expression. Data analysis consists of the identification of constitutive "horizons" or "modes of presence" that make possible the experience of the situations described. There is a turning, then, from given facts (the data as presented) to intended meanings (the data as understood by the researcher)—from the simple *givenness* of the situation in the individual's experience to a reflective apprehension of that situation's meaning as having been co-constituted ("intended") by the individual's consciousness, or existential presence.

Drawing its assumptions on the tradition of phenomenology (Hycner 1999), hermeneutics (Dilthey 1996), and symbolic interactionism (Blumer 1969), IPA (Smith et al. 1995; Smith et al. 1997; Smith et al. 1999) attempts to understand how people make sense of their lived experiences. IPA also emphasizes that the research exercise is a dynamic process with an active role for the researcher in that process. In this study, the researchers tried to get close to the participants' personal world—an insider's perspective (Conrad 1987)—whilst acknowledging that inductive processes of meaning making inevitably involved both researcher and participants (Smith and Osborn 2008). The fundamental principle of IPA is the use of a double hermeneutic interpretation process whereby the researcher both tries to understand the participant's subjective experience, but also to examine underlying meanings (Aresti et al. 2010; Smith 2011). Here IPA is used to explore and develop in-depth descriptions of human experience.

Method

Out of the two approaches—the idiographic case-study approach and the theory building approach—of IPA (Smith et al. 1999), the present study involved the idiographic case-study approach to provide thick, rich, and in-depth understanding of the lived experiences of the patients with CVD in their lives and the protective factors that facilitated their positive living during illness. This method is suitable for small samples of upto ten participants and enables the investigator to

write up a single case or exploration of themes shared between the cases by understanding the participants' life situations.

Participants

IPA studies usually involve small samples in order to enable a sufficiently in-depth, nuanced examination of idiographic perspectives (Smith et al. 2009). Hence initially 15 persons having CVD were contacted and requested to participate in this study. Out of them, eight persons (equal number of men and women) agreed to participate by signing their informed consent forms. Their ages ranged from 29 to 58 years (M=45.5). At the time of interview, one was unmarried, five were married and living with husbands, one was divorced, and one was widowed. The participants had been diagnosed with CVD for two to 12 years. Participants of above 60 and below 25 years of age with CVD, and having known psychological illness were decided to be excluded from the purview of the study. Table 1 shows the participants' characteristics.

Interviews

Face-to-face semi-structured interview method was selected to collect qualitative data for this study. All the interviews were carried out by the first author, and followed a conversational format in the mother tongue of the participants. The interview session lasted between 40 and 60 min; in two cases interviewer took two sessions to complete the interview process. Each interview was digitally recorded, fully translated, and given pseudonyms. Later on the transcripts were translated into English, retranslated to the original language, and verified the accuracy by two selected language experts. In the interview sessions, the participants were asked to give their background details and their illness. Towards the end of the interview, the participants were requested to reflect on specific protective factors those helped them to cope and live positively despite the illness.

Data Analysis

Data analysis proceeded ideographically by following a standard procedure. Initially the English version of each of the transcripts was read and re-read several times to gain a holistic picture of the participants' account of their lived experiences. As suggested by Smith and Osborn (2008), micro themes, or specific meaning units were noted down in the margin of the transcripts. Those were examined carefully and collated into idiographic descriptions of life world. Consequently a re-iterative process was followed in which recurring common themes were emerged. These themes were then organized into larger superordinate (convergent) themes. During this organization process, the second author with the help of other two continuously referred back to the transcripts to ensure that the themes selected were representative of the participants' narratives. The re-iterative process was continued throughout the analysis to ensure that the data were appropriately represented. As suggested by Braun and Clarke (2006), the emerged themes were reviewed on the basis of Patton's (1990) dual criteria judging categories, which focused on internal homogeneity and external heterogeneity. Finally the authors identified the essence of what each theme was about as well as the themes overall, and determined what aspect of the data each theme captured.

Results

Participants were experts on their own experiences and offered researchers an understanding of their thoughts, commitments, and feelings through telling their own stories, in their own words, and in as much detail as possible. Several themes emerged over time as the data analysis proceeded. However, the themes were collated under two superordinate themes—(1) lived experiences and feeling in life and (2) dynamics of positive living during illness. The superordinate themes with their respective sub-themes with specific illustrative quotations are listed in Table 2.

Table 1 Participants' characteristics

Name[a]	Age	Gender	Marital status	Duration of disease	Occupation	Other disease present	Duration of interview[b]
Sagar	29	Male	Unmarried	2 Years	Student	No	43+40
Deepika	33	Female	Married	3 Years	Software Engineer	No	45
Anand	42	Male	Married	5 Years	Teacher	No	50
Bindu	42	Female	Widowed	2 Years	House-wife	No	45
Smita	53	Female	Married	9 Years	House-wife	Diabetes	54
Reeta	53	Female	Married	4 Years	House-wife	No	60
Rakesh	54	Male	Divorced	7 Years	Divisional Engineer	No	40+45
Venkat	58	Male	Married	12 Years	Revenue Inspector	Diabetes and Hypothyroidism	48

[a] All names are pseudonyms; [b] Duration of interview is in minutes

Table 2 Superordinate themes and their sub-themes with specific illustrative quotations

Superordinate theme	Sub-theme	Illustrative quotation
Lived experiences and feeling in life	Childhood bizarre experiences	'During my sixth standard, my parents got divorced… during that phase as a child, I didn't know with whom I should stay. This put me into difficult situations.'
	Deprivation and disadvantage situations	'… My parents abused each other every moment when I was very small. My parents got divorced. I stayed with my mother, and separated from my father and siblings. I missed them in my life …'
	Heightened shock and separation anxiety	'All of a sudden my father collapsed and died in front of me a year ago. At that time, I fainted and I did not know what happened. I was taken to the hospital and I could not see my father's dead body. By the time I discharged from the hospital, the funeral rites were performed. The doctors diagnosed me with myocardial infraction and operated [on] me.' 'With 4 months gap both my husband and daughter died. After 6 months, I was diagnosed with cardiac problem and doctors planned for an immediate surgery…'
	Interpersonal conflicts and betrayal	'A shocking news which made me feel very bad…and I got heart stroke by listening that. I feel very embarrassed to say that my wife had extra marital relationship with another man. By listening that I became bed-ridden. And after that I have gone through bypass grafting surgery.'
	Children's failure and helplessness	'My younger son should earn and live by himself without depending on others. Because after my and his father's death, no one would take care of him.'
Dynamics of positive living during illness	Abundant care and love from family	'… Now I am very happy with my wife for her care.' '… The happiest moments, after all the tragedies in my life, was the academic performances of my children…their love and care towards me. Also their respect to my words made feel very happy…'
	Adherence	'…Now I am taking medicine regularly in time. I am also controlling my food as per doctor's advice. Because I know the value of my life…'
	Positive thinking and hope	'Now I am optimistic, because I am the only person on whom my daughters depend upon. I have to live for them. And living through challenges is a new opportunity…'
	Specific coping strategies	'…I have started engaging myself in physical exercise, gardening, and my other hobbies. These make me feel fit and relaxed. These also help me a lot in overcoming the tension I often feel due to this disease…'
	Religiosity and spirituality	'… The strength given by God helped me to overcome all the troubles in my life'. 'We should not transfer our energies to negative aspects of our lives. If we do so, we would hamper ourselves. Rather if we would invest on positive aspects, we would create a positive impact on ourselves and in the society.'

1. Lived experiences and feeling in life

   The lived experiences and feelings of the majority of the participants appeared like wave with heightened peak of emotional shocks, sufferings, stress, loneliness, and repeated challenges which increased their disease vulnerability. Almost everybody narrated their childhood bizarre experiences, and deprived and disadvantaged situations. Some participants vividly explained the heightened shock and separation anxiety, and interpersonal conflicts whereas others emphasized upon the repeated failures of their children. These sub-themes under this superordinate theme are explained with specific illustrative quotations.

   (i) Childhood bizarre experiences. All the participants emphasized the importance of their childhood lived experiences and feelings, which shaped the trend of their lives. Most of them faced difficult and crises-oriented situations as a result their childhood was laden with sorrows and sufferings, whereas few participants enjoyed joyful childhood.

'During my sixth standard, my parents got divorced… during that phase as a child, I didn't know with whom I should stay. This put me into difficult situations.'

(ii) Deprivation and disadvantage situations. Social, financial, and parental deprivation were the key subthemes emerged from the narratives of the participants. Due to the disadvantaged situations and poverty, some participants faced social discrimination and financial problems. Others reported the deprivation of love and care from the parents due to parental divorce. These negative life conditions constantly hammered the participants inside and became instrumental to make them susceptible to health hazards.

'… My parents abused each other every moment when I was very small. My parents got divorced. I stayed with my mother, and separated from my father and siblings. I missed them in my life …'

(iii) Heightened shock and separation anxiety. Participants explained the vacuum created in their life due to the untimely death of their children, spouse, or parents. In certain cases the incidence of death happened in front of the participants. The incidence and its impact, both short-term and long –term, were directly responsible for the participants' development of the CVD. The following two illustrative quotations depict how the incidence of death created high level of anxiety and emotional shock in the participants, and changed them into patients with CVD.

'All of a sudden my father collapsed and died in front of me a year ago. At that time, I fainted and I did not know what happened. I was taken to the hospital and I could not see my father's dead body. By the time I discharged from the hospital, the funeral rites were performed. The doctors diagnosed me with myocardial infraction and operated [on] me.'
'With 4 months gap both my husband and daughter died. After 6 months, I was diagnosed with cardiac problem and doctors planned for an immediate surgery…'

(iv) Interpersonal conflicts and betrayal. The participants expressed their constant exposure to stress due to the bitterness of interpersonal relationships. The major areas were sibling rivalry, problem of understanding with spouse, problems with in-laws, and children's erratic behaviour with parents during their adolescence. One participant pointed out the betrayal of his wife in the form of engaging in post-marital affairs, and the degree and kind of the impact was severe, specifically in terms of stress, anger, and later on depression, on the participant. Few also pointed out the treachery of their intimate friends a persistent source of stress in their lives.

'A shocking news which made me feel very bad…and I got heart stroke by listening that. I feel very embarrassed to say that my wife had extra marital relationship with another man. By listening that I became bed-ridden. And after that I have gone through bypass grafting surgery.'

(v) Children's failure and helplessness. Few parents shared the feeling of their sorrows due to the repeated failure of their children. They were in constant pressure to think of the future of their children. Their helplessness becomes responsible for their deteriorating health conditions, as they were unable to sleep and eat properly.

'My younger son should earn and live by himself without depending on others. Because after my and his father's death, no one would take care of him.'

2. Dynamics of positive living during illness

As one of the aims of the study was to identify and understand the specific dynamics of positive living during the illness, the researchers attempted to search the protective factors in the answers of the participants. Protective factors are individual or environmental characteristics, conditions, or behaviours that reduce the effects of stressful life events. These factors also enhance an individual's ability to avoid risks or hazards, and promote psychological, social, and emotional competence to thrive in all aspects of life, even in adversities. The major protective factors or dynamics followed by the persons during their illness are described under the five sub-themes.

(i) Abundant care and love from family. The participants shared the positive emotions and feelings they experienced when their family (basically spouse, children, and parents) started caring much during the illness. After being diagnosed with the CVD, the family started exhibiting much attachment and love with the participants. The caregivers' availability, proximity, and much emotional bonding changed the participants' perspectives about the illness and life. While interviewing, one of the participants replied with smile, '… Now I am very happy with my wife for her care.'

'… The happiest moments, after all the tragedies in my life, was the academic performances of my children… their love and care towards me. Also their respect to my words made feel very happy…'

(ii) Adherence. All the participants talked about their serious adherence to medication, diet, and exercises. Few also stated that they started sleeping adequately after the illness. Suddenly their adherence increased not because of their efforts or the illness, but because of the love, care, and attachment of their family due to the illness condition. During the initial phase of the illness whoever family members the participants met, they reminded them about their medicines, and maintenance of good health. Because of the active involvement of the family, the diet pattern also became healthy.

'…Now I am taking medicine regularly in time. I am also controlling my food as per doctor's advice. Because I know the value of my life…'

(iii) Positive thinking and hope. Most of the participants reiterated that the changed family atmosphere and everybody's attention gradually changed their thought pattern. After the diagnosis of the disease, they experienced high level of anxiety, sleeplessness, fear, feeling of loneliness, and negative thinking. Few participants also experienced nightmares during the initial phase of their illness. Assurance of the doctors, the impact of medicines, availing more information about the disease condition, and the positive atmosphere around them in the form of love, attachment, and encouragement decreased the frequency of their negative thoughts and increased the frequency and level of their positive thinking. Because of this, they became hopeful and optimistic about their better recovery, and tried to be happy.

'Now I am optimistic, because I am the only person on whom my daughters depend upon. I have to live for them. And living through challenges is a new opportunity…'

(iv) Specific coping strategies. The participants were observed to use five major coping strategies often during their illness. In most of the cases, seeking social support and distancing were prominent, whereas few used planful problem solving, escape and avoidance, and self-control strategies depending on the stressful situation. Moreover, emotional management was dominant than problem solving so far as the coping with the illness condition was concerned.

'…I have started engaging myself in physical exercise, gardening, and my other hobbies. These make me feel fit and relaxed. These also help me a lot in overcoming the tension I often feel due to this disease…'

(v) Religiosity and spirituality. Some participants were religious, and their religiosity helped them manage the challenges during the illness phase. By worshipping God and doing certain rituals they tried to obtain happiness and peace during the illness condition. Certain participants tried to understand themselves, the mistakes they had committed, and the meaning of their lives. This realization transformed them towards positive living and helped them cope with the challenges that were arisen out of the illness.

'… The strength given by God helped me to overcome all the troubles in my life'.
'We should not transfer our energies to negative aspects of our lives. If we do so, we would hamper ourselves. Rather if we would invest on positive aspects, we would create a positive impact on ourselves and in the society'.

Discussion

As a part of lived experience, participants have conveyed their sufferings and encounters with critical situations in their lives starting from their childhood. Childhood bizarre experiences, continuous deprivation and exposure to disadvantaged situations, heightened shock and separation anxiety, interpersonal conflicts and betrayal, and in certain cases their children's failure and helplessness have contributed negatively to their lives. Research findings state that negative emotional states, like depression, are strongly associated with poor outcomes in patients with CVD (Kaptein et al. 2006). Even though the participants are physically healthy prior to the onset of the CVD, the above psychologically critical life situations increase their vulnerability towards CVD. Few participants have also expressed that illness has not changed their lives, but the continuous sufferings in their life is responsible for the illness. Untimely death of children, spouse, or parents, and betrayal of the spouse in the form of engaging in post-marital affairs are observed to have severe impact on the person, specifically in terms of anxiety, stress, anger, and depression. Anger usually is triggered in response to perceptions of unjust events or actions and has both trait and situational aspects (Everson-Rose and Lewis 2005). After the diagnosis of the CVD, the experience of high level of anxiety, sleeplessness, fear, feeling of loneliness, and negative thinking further aggravate the condition. Research findings suggest that anger, anxiety, impatience, and other such emotions and psychological characteristics have been found to be common among people with heart disease (Barefoot et al. 1989).

We have also observed that due to constant exposure to certain negative life situations, the participants develop certain

inner resources and use them in unique way to live their lives in the fullest possible ways. The unique way of receiving the abundant care and love from family make them happy and strong inside to perceive lives positively. Positive affect is associated with lower morbidity and increased longevity for older individuals (Pressman and Cohen 2005). At the same time adherence to treatment regimen (adherence to medication, diet, and exercises), and seeking of information about their disease condition clarifies the negative orientation towards the disease. Research shows that increasing physical activity leads to improvements in mental and physical health (Biddle and Mutrie 2001). Because of the positive environment around them, their positive thinking, optimism, and hope act as buffer against the illness. Researches show that optimism, happiness and other positive emotions have been associated with effective cardiovascular outcomes in persons with and without known heart disease (Denollet et al. 2008). Research findings substantiate that optimism is a prominent protective factor for persons with CVD (Giltay et al. 2007). The specific coping strategies—seeking social support, distancing, planful problem solving, escape and avoidance, and self-control—help them manage the stress (Hariharan and Rath 2008) arising out of their illness. Their religiosity and spirituality help them explore and understand the meaning of their lives and steer them towards happiness—the positive dimension of human life. Though the sources of happiness differ, the tendency of the participant to be positive and happy during illness acts as a protective factor. Research study suggests that being significantly unhappy is associated with negative cardiac outcomes (Wulsin and Singal 2003). However, the positive environment around them and self-realization make a transition of the person's 'self' and 'identity' during the illness. From the results it is also observed that the persons with CVD continuously strive to transform themselves towards the positive dimension of life. One such significant marker of positivity appears when a participant, after his successful recovery from the surgery, has perceived the challenges of the illness as a new opportunity to live his life in the direction of achieving the incomplete personal and social responsibilities. These psychosocial protective factors help in increasing the longevity and promoting the well-being of the persons with CVD. Thus, the lived experiences of the persons with CVD help us to understand their psychological critical life situations and the strategies they follow to salvage their lives by transforming themselves from the negative to positive. Such transformation helps them live positively with the multifaceted challenges of their illness. The findings would help to design positive psychological intervention to enhance the positive health of the persons with CVD.

The strengths of the study include its relatively homogenous sample in terms of illness, and the in-depth qualitative enquiry of the lived experiences. However, certain major limitations of this study can be identified. Firstly, the findings cannot be generalized as the sample involved only eight cases, as they may not be the representative of the CVD population. The participants also do not belong to a single disease; in certain cases other diseases are present. In addition, there is a wide variation noticed in terms of the tenure of the illness and the age of the participants. Since the study focuses on the lived experiences, the perspectives and the living pattern of men and women are expected to vary, which is ignored in this study.

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Hopelessness during emerging adulthood: Contributions of anxiety

Suvashisa Rana, Gitanjali Lall, Asima Mishra, Durgesh Nandinee, Kallavarapu Vincent
Centre for Health Psychology, University of Hyderabad, Hyderabad, Telangana, India

ABSTRACT

Context: During emerging adulthood, a person takes on several roles and needs to cope up with psychosocial challenges that are connected to an autonomous personal life. Hence, anxiety and its repercussions, though common in this phase, yet may produce a detrimental effect in their life. **Aims:** The objective of the study was to examine the contributions of anxiety to hopelessness of emerging adults during their transitional phase from late adolescence to adulthood. **Settings and Design:** The study involved a correlational design where anxiety, academic difficulty, age, and gender were predictors and hopelessness was the criterion. **Materials and Methods:** One hundred fifty university students, both men and women, in their emerging adulthood were selected, of which 132 completed the Institute of Personality and Ability Testing Anxiety scale, Beck's Hopelessness scale, and a single-item measuring the presence or absence of academic difficulty. These instruments were administered individually along with demographic details. **Statistical Analysis Used:** The data were analyzed by means of descriptive statistics, Pearson's product-moment correlations, simple and multiple linear regression analyses. **Results:** The results revealed that the anxiety along with academic difficulty and gender was found to contribute individually to hopelessness, whereas age was not. A significant combined contribution of anxiety, academic difficulty, and gender to hopelessness was observed. Of the five dimensions of anxiety, low self-control and tension were found to be significant predictors of hopelessness. **Conclusions:** Findings could be useful for screening the vulnerable persons, and also helpful in designing psychosocial intervention for promoting positive health.

Key words: Anxiety, emerging adulthood, hopelessness, positive health

Address for correspondence: Dr. Suvashisa Rana,
Centre for Health Psychology, University of Hyderabad, Central University Campus P.O., Gachibowli, Hyderabad - 500 046, Telangana, India.
E-mail: suvemail@gmail.com

INTRODUCTION

The term "emerging adulthood" is described as a culturally constructed period of extended adolescence that occurs in industrialized countries.[1] Individuals in this period, ranging between the age of 18 years and 25 years do not tend to view themselves as adolescents or adults as they are in the pursuit of identity exploration. Individuals in this transition need to cope up with psychosocial challenges that are connected to an autonomous personal life. Therefore, this phase of life is a sensitive period in an individual's life span. High rates of psychological morbidity, especially depression, and anxiety, are found among university students all over the world, who are in their emerging adulthood. The high prevalence of depression, anxiety, and stress symptoms among Turkish University students is reported.[2] Similar findings have been reported in India, where high rates of depressive, anxiety, and stress symptoms have been found among young male adults.[3] Anxiety has been found to contribute greatly to depression among the university students in India.[4] It has been argued that the multiple internal and external stressors of emerging adulthood can contribute to significant alterations in mental health, for the better or the worse.[5] Research suggest that the five developmentally distinctive features of emerging adulthood–the age of identity explorations, age of instability, most self-focused age of life, age of feeling in-between, and age of possibilities–explain the vulnerability of substance use in this phase.[6] It is necessary to understand the mechanisms involved in anxiety due to the high prevalence rates as well as because the occurrence of this increases the likelihood of developing feelings of hopelessness which has links with suicidal ideation and behaviors.

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Anxiety is a negative mood state characterized by bodily symptoms of physical tension and apprehension about the future.[7,8] It is a physiological and emotional response to known or unknown causes that may range from a normal reaction to extreme dysfunction affecting decision-making, adherence to treatment, and quality-of-life.[9,10] Anxiety has been often linked to hopelessness. Hopelessness is a system of negative expectancies concerning oneself and one's future life.[11,12] It has been defined as the expectation that highly desirable outcomes will not occur and that one is powerless to change the situation.[13]

Studies done on adolescents have shown that anxiety and hopelessness are closely related.[14,15] Anxiety is also found to have influence on suicidal behavior through its effect on hopelessness among adolescents.[16] Anxious temperament has been found to predict hopelessness.[17] The personality trait of neuroticism, characterized by levels of anxiety has been found to positively predict hopelessness[18] which in turn has been found to predict suicidal intent in young suicide attempters.[19] Anxiety, depression, and hopelessness are associated with adolescent suicidal behavior[20-24] and are generally thought to be more proximal influences of suicidal behaviors than other risk factors, such as poor scholastic performance or low family support.

Studies show that the anxiety has been associated with suicidal thoughts, attempts, and completed suicide, and has been linked with events precipitating suicidal behaviors. Adolescent suicide attempters and suicide victims are more likely to have been diagnosed with anxiety disorder.[25] Studies on the Indian general population have found a comorbidity of neurotic disorders and suicide.[26,27] While extreme anxiety may influence imminent suicidal behaviors, across time the effects of anxiety may be more harmful, contributing to the development of depression and or hopelessness. A study conducted on the relationship between personality and psychological distress in India, for instance, found that individuals characterized by the presence of anxiety and its aspects such as suspicion and tension suffer from psychological distress.[28] High risk emerging adults are often vulnerable to poor scholastic achievement, lack of family support, and drug involvement. Considering this significant transition phase, the study attempted to examine the contributions of anxiety to hopelessness of emerging adults during their transitional phase from late adolescence to adulthood.

MATERIALS AND METHODS

The study was based on correlational design. Anxiety, academic difficulty, age, and gender of the participants were the predictors, and hopelessness was the criterion in this study.

Subjects

There were 150 participants selected using convenient sampling from a university population, out of which 132 responded by signing the informed consent forms to participate in this study. Out of the 132 participants, 66.7% were women, and 33.3% were men. The age of the total participants varied from 20 to 30 years, the mean age being 23.03 years. Participants below the age of 20 and above the age of 30, and having known psychiatric problems were excluded from the study.

Research instruments

Beck's hopelessness scale

Beck's Hopelessness Scale consisted of 20 statements with each statement having two response options namely, true and false.[11] The total hopelessness score was found by adding the scores of all items. A score from 0 to 3 indicated minimal hopelessness, 4-8 indicated mild hopelessness, 9-14 indicated moderate hopelessness, and a score above 14 indicated the presence of severe hopelessness.

Institute of personality and ability testing anxiety scale

Institute of Personality and Ability Testing Anxiety Scale consisted of 40 statements measuring overt and covert anxiety.[29] A three-point rating scale was used to measure the participant's response. The scale measured anxiety on five dimensions–low self-control, emotional instability, suspicion, apprehension, and tension. Dimension-wise scores were obtained by adding the scores of all the items in each dimension. Total anxiety score was found by adding the scores of all the items, and it ranged from 0 to 80.

Personal details form

This form recorded the participant's name, age, gender, name of the course, and semester. An item having dichotomous response (yes or no) was included in this form to measure whether the participants faced problems with their study.

Procedure

Students doing various different courses in the university were approached based on the inclusion and exclusion criteria using convenient sampling. The purpose of the study was explained, and informed consent was taken from the participants to participate in the study, prior to administration of the scales. As a part of the administration, rapport was established with the participants and

instructions were then given to respond to each of the items of the scales. The instructions were given verbally to the participants as well as provided in a written form. Further communication and explanation were provided whenever necessary. The instruments were administered individually. The average time duration required by the participants to fill out the entire set of scales was 15-20 min. The participants were debriefed after each session of assessment.

RESULTS

The quantitative data were analyzed by means of descriptive statistics, simple, and multiple linear regression analyses. After testing the assumptions, simple linear regression analyses were conducted to examine the individual contributions of anxiety, age, academic difficulty, and gender on hopelessness. Results revealed that anxiety explained statistically significant (15%) proportion of the variance in hopelessness, $R^2 = 0.15$, adjusted $R^2 = 0.14$, $F(1, 130) = 22.13$, $P < 0.001$. The relationship between anxiety and hopelessness was positive, $\beta = 0.38$, $P < 0.001$, with an increase in anxiety level being associated with an increase in the hopelessness levels. The relationship between age and hopelessness was not statistically significant, $F(1, 130) = 1.34$, $P = 0.250$. It was observed that academic performance explained statistically significant (9%) proportion of the variance in hopelessness, $R^2 = 0.09$, adjusted $R^2 = 0.08$, $F(1, 130) = 12.77$, $P < 0.001$. The relationship between academic difficulty and hopelessness was positive, $\beta = 0.30$, $P < 0.001$, with an increase in academic difficulty being associated with an increase in the hopelessness level. It was also evident that gender explained statistically significant (4%) proportion of the variance in hopelessness, $R^2 = 0.04$, adjusted $R^2 = 0.03$, $F(1, 130) = 5.02$, $P = 0.027$. The relationship between gender and hopelessness was positive, $\beta = 0.193$, $P = 0.027$, indicating that men had higher levels of hopelessness than women. No significant relationship was found between age and any other variables under study.

Since anxiety, academic performance, and gender individually had impact on hopelessness, a multiple linear regression analysis was done to examine their combined contributions. Table 1 represents the results of the multiple linear regression. The results revealed that the combined predictors explained statistically significant (22%) proportion of the variance in hopelessness, $R^2 = 0.22$, adjusted $R^2 = 0.20$, $F(3, 128) = 12.16$, $P < 0.01$. All the three predictors, anxiety ($\beta = 0.34$, $P < 0.01$), academic performance ($\beta = 0.19$, $P < 0.05$), and gender ($\beta = 0.19$, $P < 0.05$) were significant individual predictors of hopelessness in the combined model.

To analyze the combined contributions of the dimensions of anxiety to hopelessness, a multiple linear regression was done, and the results are presented in Table 2.

From Table 2, it is revealed that the combined predictors – low self-control, emotional instability, suspicion, apprehension, and tension – explained statistically significant (16%) proportion of the variance in hopelessness, $R^2 = 0.16$, adjusted $R^2 = 0.12$, $F(5, 126) = 4.65$, $P < 0.01$. Low self-control ($\beta = 0.19$, $P < 0.05$) and tension ($\beta = 0.21$, $P < 0.01$) were the only significant predictors of hopelessness, neither emotional instability ($\beta = 0.10$, $P = 0.26$), suspicion ($\beta = 0.11$, $P = 0.18$) nor apprehension ($\beta = -0.03$, $P = 0.74$) were found to significantly predict hopelessness.

DISCUSSION

The results indicate that the relationship between anxiety and hopelessness is positive with an increase in anxiety levels leading to an increase in the levels of hopelessness, which needs to be properly addressed. Anxiety, both overt and covert, is found to contribute individually as well in combination with other factors to hopelessness. Among the other under the study, anxiety is the greatest contributor to hopelessness. This may be because anxiety is often associated with a sense of ambiguity and negative

Table 1: Combined contributions of anxiety, academic performance, and gender to hopelessness

Variables	*B*	SEB	*β*
Anxiety	0.110	0.03	0.34**
Academic performance[a]	1.12	0.50	0.19*
Gender[b]	1.23	0.50	0.19*
R^2	0.22		
C	−0.35		
F	12.16**		

*P<0.05, **P<0.01. [a]Academic difficulty is a dichotomous variable coded as 0=Absence of difficulty and 1=Presence of difficulty, [b]Gender is a dichotomous variable coded as 0=Woman and 1=Man. B: Unstandardized beta coefficient, SEB: Standardized error of beta, *β*: Standardized beta coefficient

Table 2: Combined contributions of dimensions of anxiety to hopelessness

Variables	*B*	SEB	*β*
Low self-control	0.22	0.11	0.19*
Emotional instability	0.10	0.09	0.10
Suspicion	0.22	0.16	0.11
Apprehension	−0.03	0.09	−0.03
Tension	0.20	0.10	0.21*
R^2	0.16		
C	0.15		
F	4.65**		

*P<0.05, **P<0.01. B: Unstandardized beta coefficient, SEB: Standardized error of beta, *β*: Standardized beta coefficient

emotionality. Increased amounts of anxiety are known to effect individuals negatively. The presence of increased amounts of negativity in one's life may trigger a person to lose hope, thereby explaining the contribution of anxiety to hopelessness. This is in accordance with previous findings which suggest that anxiety and hopelessness are closely related.[14-17]

The five dimensions of anxiety–low self-control, emotional instability, suspicion, apprehension, and tension–are found to have a combined impact on hopelessness. However, only low self-control and tension are found to significantly contribute to hopelessness. Therefore, individual-based intervention programs are to be designed to enhance the self-control and manage tension during the emerging adulthood for a smooth transition from adolescence to adulthood without deviant behavior. Apart from anxiety, gender and academic performance of the emerging adults are also found to be the predictors of hopelessness. This is in accordance with previous findings, which found that academic failure strongly predicts hopelessness in adolescents.[30] This may be because higher education and its expectations play an important role in the lives of individuals in their developmental stage of emerging adulthood. Many college students may find their academics very challenging and stressful.[31] Since higher academic achievements are considered as one of the major determinants of the career, increased difficulty in the area may contribute to increased levels of hopelessness.

Gender is found to significantly contribute to hopelessness during emerging adulthood with men experiencing higher levels of hopelessness. This is in accordance with previous findings which suggest that there is a gender difference in the hopelessness levels of male and female young adults.[32] Research suggests that adolescent males displayed more hopelessness than their female counterparts.[24] Contradictory findings have also been reported in adolescents, where no gender differences have been found.[32,33]

There is no impact of age on hopelessness, indicating that hopelessness is present among the emerging adults irrespective of their age. This may be due to various reasons. Research has shown that entry into the labor market is often stressful and frustrating, especially for emerging adults with limited educational credentials.[34,35] Even among the academically advantaged emerging adults, their extraordinarily high expectations for the workplace–their aspirations of finding work that not only pays well but also provides a satisfying and enjoyable identity fit–are difficult for reality to match and often require compromises of their hopes and dreams.[36] A possible explanation for mental health problems in emerging adulthood suggest that the life of adolescents is much less structured than that of children, adolescents and adults beyond the stage of emerging adulthood, which may lead them to feel lost.[37]

However, studies have found that hopelessness has a direct impact on suicidal behaviors.[16] Therefore, this study can help in screening out students who are at risk for suicidal behavior. It can also be helpful in designing psychosocial interventions targeted at reducing anxiety, thereby reducing hopelessness and suicidal ideation among the vulnerable emerging adults and promoting positive health. Various studies have found that apart from anxiety, depression is a major contributor to hopelessness.[15,16] The role of depression in hopelessness is not examined in the current study. This explains the reason for anxiety, gender and academic difficulty contributing only partly to hopelessness. Examining other significant predictors can serve as a future direction of the study. The use of nonprobability sampling method, relatively small sample size, and the absence of qualitative data are the bottleneck of this study.

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DOCTOR-PATIENT COMMUNICATION IN HEALTH CARE: ISSUES AND CHALLENGES

Asher Andrew, Vincent Kallavarapu**, Marlyn Thomas*** and Sunayana Swain*****

ABSTRACT

Effective doctor-patient communication acts as a fulcrum in accommodating a smooth transition from doctor centered communication to the patient centered communication in the health care system. This review presents the significance of the doctor-patient communication health care scenario. The benefits and barriers of doctor-patient communication and the methods to enhance the doctor-patient communication are reviewed. The present qualitative and quantitative measurements of doctor patient communication are critically analyzed. Endorsing that communication is a two way process, this review suggests the need for quantifying the communication based on the bidirectional approach of communication.

Keywords: Doctor-patient communication, relevance, measurement, benefits, barriers.

INTRODUCTION

For a remarkable transformation of health care system, communication plays a decisive role as a cost effective strategy. Veritably, doctor–patient communication is one of the most essential dynamics in health care, affecting the course of patient care and clinical adherence (Matusitz & Spear, 2014). According to Schofield (2004), *'effective communication was a drug that could*

* MOMA Scholar, Centre for Health Psychology, University of Hyderabad, Hyderabad-500046

** Junior Research Fellow, ICMR, Centre for Health Psychology, University of Hyderabad, Hyderabad-500046

*** Junior Research Fellow, ICMR, Centre for Health Psychology, University of Hyderabad, Hyderabad-500046

**** Lecturer, St.Francis College for Women, Hyderabad.

be prescribed!' as the patient gains therapeutic benefit just from venting concerns in a safe environment with a caring clinician. The clinical adherence is high among the patients who have knowledge about the illness and good communication with the doctor (Conthe et al., 2014). This lays an emphasis for a patient centred approach in health communication process.

WHY PATIENT CENTRED COMMUNICATION?

Historically in medicine, there was a paternalistic approach to decide what should be done for a patient—the doctor knew the best and the patient accepted the recommendation without question. This era has come to an end, being replaced with consumerism and the movement toward shared decision-making. Patients are advised to educate and ask questions. Patient satisfaction with their care rests heavily on how successfully this transition is accomplished. Ready access to quality information and thoughtful patient-doctor discussions is at the fulcrum of this revolution.

Good doctor-patient communication has the potential to help regulate patients' emotions, facilitate comprehension of medical information, and allow for better identification of patients' needs, perceptions and expectations (van Zanten, Boulet, McKinley, DeChamplain, & Jobe, 2007; Bredart, Bouleuc, & Dolbeault, 2005; Arora, 2003; Platt & Keating, 2007). Thus the shift from doctor centered communication to the patient centered communication has begun. As a result, majority of patients are preferring family doctor over super specialist. Unfortunately Indian system has moved away from the age old practice of having family doctors.

Research evidence in the past three decades has proved that doctor-patient communication plays a pivotal role in delivery of high quality patient-centered health care (Golin, Thorpe, & DiMatteo, 2007). With the paradigm shift from biomedical to biopsychosocial approach in health care, the professional assessment of health providers also demands the skills of patient centred communication in addition to professional knowledge and technical skills (Mead & Bower, 2000). This is because the patient who suffers from a disease and seeks treatment does so in a psychosocial context.

It is essential to know if the patient is high on anxiety and depression (which impacts the cognition and thus the memory to be regular with medication), has a social support network of family and friends to aid in therapeutic adherence (that includes diet, exercise and other lifestyle factors) and the economic status to afford the medication and other treatment regimen prescribed. Such considerations can play a role in treatment line only when the doctor-patient communication in the initial consultation is effective to provide an insight to the doctor on the patient's psychosocial background. Once this is achieved, further process of health care ropes in the patient and family in major decision making which successfully enforces sharing of responsibility on both the patient and the

doctor. Such patient-centered care through biopsychosocial approach helps in developing a therapeutic alliance between the doctor and the patient, where inputs on patients' preferences and doctors' professional advice receive considerable assessment in the best of optimal outcome. In this process the doctor and the patient develop a bond where the patients' trust in the doctor goes beyond the perceived components like clinical competence and describes the doctor as 'supportive' and 'humane'.

Thus, while endorsing the doctor as a professional, the patient also perceives the important human face in the doctor which is very essential in developing a relationship. Thus 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, 2004). Therefore, the health communication that takes a biopsychosocial approach forms a reciprocal relationship between the doctor and the patient.

SIGNIFICANCE OF DOCTOR-PATIENT COMMUNICATION

The ultimate aim of doctor-patient communication is to improve patient's health and optimize medical care (Duffy et al., 2004). With optimal adherence, the prognosis is expected to be the best (Swain, 2013). The basic elements of doctor-patient communication are to build the relationship, create a path for the discussion between the doctor and the patient, gather information about the patient's problems and issues, and to mutually decide the plan of action to handle them (Makoul, 2001).

A substantial body of evidence shows that effective communication between the doctors and the patients can lead to positive outcomes for patients, for doctors and others. A healthy doctor-patient communication leads to creating a good interpersonal relationship, exchange of information between the doctor and patient, and facilitates the decision-making process (Ha, Anat, & Longnecker, 2010). Studies give evidence that links effective doctor-patient communication to desirable health outcomes such as improved adherence to treatment and improved prognosis (Swain, 2013), lower patient stress levels and higher physician satisfaction (Guadagnino & Branch, 2006).

INDIAN SCENARIO: A CHALLENGE

A recent Indian statistics reveal that, because of its dramatic doctor-patient ratio of 1:1800, (Deo, 2013) India is listed under countries with critical shortage of health service providers. The average time a physician interacts with a patient is progressively becoming shorter across the globe and more so in India (Thomas, Hariharan, Rana, Swain, & Andrew, 2014). While the reason in Indian scenario can be attributed to the disproportionately large number of patients the doctor has to see in a day compared to his/her counterpart in the West, one cannot ignore the fact that technology dependence in health care is compelling the

doctors to distribute the time between the patients and computers and other electronic gadgets. This has reduced the average doctor-patient interaction time to something between two to ten minutes (Deveugele, Derese, van den Brink-Muinen, Bensing, & Maeseneer, 2002). Groopman's (2007) study found that a patient on an average is given just 18 seconds to describe the symptoms before the doctor interrupts which greatly increases the scope of making errors in diagnosis and treatment plans. With a desirable ratio between doctors and patients, if this is the state of affairs in developed countries, with the given doctor patient ratio, the Indian scenario with respect to consultation time is anybody's guess. While this reality cannot be transformed overnight, the challenge lies in accepting this reality and optimising time management and communication within the limited time.

Demand for effective doctor-patient communication assumes added significance in the light of chronic illness replacing acute problems, which can be attributed to life style changes. The non-communicable diseases (NCDs) demand effective lifelong management. The NCDs are viewed as epidemic posing the greatest global challenge to the 21st Century (Murray & Lopez, 1996; Reddy, 2003). Collectively, NCDs account for 63% of all deaths worldwide with 80% of those taking place in developing countries (Narayan, Ali, & Koplan, 2010; WHO, 2013). According to a report by WHO (2002), it is expected that chronic diseases will account for 73% of deaths and 60% of the global disease burden by 2020, and also for major percentage of diseases and deaths in India. Treatment of NCDs, like diabetes, hypertension, asthma, cancer or HIV/AIDs demand a dire need of life style changes along with medication. This calls for skills of counseling involving the competence to motivate the patient to enhance health promoting behaviours and minimise health risk practices.

These diseases being asymptomatic are termed as silent killers. The asymptomatic characteristic of the disease is likely to prompt the patient undermine the potential dangers of non-adherence. Unless the doctor impresses upon the patient the asymptomatic nature of the disease and the devastating impact on the prognosis, it would lead to lethal consequences. It is essential that communication of the doctor includes the significance of adherence to medication, diet, exercise and self-monitoring and also highlight the alarm signals that warrant immediate medical consultation. Such communication needs to be powerful with emphasis added at right places and also must be reinforced in subsequent consultation.

QUALITY OF DOCTOR-PATIENT COMMUNICATION: IT'S CONTRIBUTIONS

Impact on Patient Adherence

Among all the consequences of doctor-patient communication, the most outstanding effect is seen in the form of increased clinical adherence in the

patients and subsequently improved prognosis. Adherence is defined as the regularity and punctuality with which the patients takes the prescribed medication, follows the diet and exercise regimen (Hall, Willgoss, Humphrey, & Kongso, 2014). Effective communication from doctors in terms of explanation, feedback, sharing of medical data was found to have enhanced adherence in patients (Tongue, Epps, & Forese, 2005; Platt & Keating, 2007; Chen et al., 2007). Friedman et al. (2008) reported that patients who received less information from their doctors showed poor adherence. Gaps in the doctor-patient communication like uni-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).

Impact on Patient Mental State and Doctor-patient Relationship

The holistic approach to health care views the patient not just as a bearer of a disease, but as an individual and as a physical, psychological and social and spiritual entity. Hence apart from the treatment of the disease, the concomitant implication on affect, cognition, behaviour and other social aspects such as financial pressures and social relationships receive their due importance. In this context the impact of high quality doctor-patient communication can be perceived in all the dimensions mentioned above. Higher quality of doctor-patient communication leads to mutual understanding, patient satisfaction, trust, bilateral involvement in decision making, agreement about treatment, and patient motivation (Street et al., 2009).

Better intermediate outcomes include better adherence and self-care by patients, both of which lead to improved health outcomes (Moore et al., 2004)**.** Effective communication is also found to reduce psychological distress in patients along with higher rate of symptom reduction and better prognosis (Golin et al., 2007). Studies have proved that direct communication and support have a significant role in reducing visits to emergency department (Bolton, Tilley, Kuder, Reeves, & Schutz, 1991) and control of chronic illness (Tildesey, Mair, Sharpe, & Piaseczny, 1996). 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 communication has also been shown to manage post-operative pain in surgical patients (Sugai, Deptula, Parsa, & DonParsa, 2013).

Patients seem to have a clear preference for doctors based on the quality of communication. In a study by Schattner, Rudin, and Jellin (2004), it is 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.

Consulting the doctors high on quality of communication is found to be the key for patient satisfaction. In a qualitative study by Anden, Andersson, and Rudebeck (2005), it is reported that the patients' perception of the outcome of clinical consultation is greatly determined by the patients' understanding of communication leading to improved satisfaction. 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.

Impact on Doctors

The positive impact is not just limited to patient benefit. The doctor is an equal beneficiary of high quality doctor-patient communication. For the doctor, the process of diagnosis involves three sequential and overlapping steps viz. data gathering, data integration and verification of diagnosis (Kuhn, 2002). Effective doctor-patient communication plays a pivotal role in collecting relevant data from the patient. It may be an exaggeration to state that this preliminary process determines the line of investigation through laboratory tests and further invasive diagnostic tests to arrive at a final diagnosis. In addition to this the studies pointed out the positive impact that good doctor-patient communication has on the doctor job satisfaction and productivity (Haas et al., 2000).

Physician satisfaction more often than not is linked to patient satisfaction with the health care service that they receive. Satisfied patients are advantageous for doctors in terms of greater job satisfaction, less work-related stress, and reduced burnout (Bredart et al., 2005). Satisfied patients are less likely to lodge formal complaints or initiate malpractice complaints on doctors (Brinkman et al., 2007).

Overall Outcome

The overall outcome of healthcare involves, democratic decision making, improved mutual trust and better doctor-patient relationship. Shared-decision making ensures shared responsibility which binds the patient to clinical adherence. Active doctor-patient communication facilitates communication of doctor's empathy to the patient. This lays the foundation for the trust in the relationship that breaks the ice facilitating the patient to unleash the 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, which in turn help in giving desirable direction to the health behaviour 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 behaviour is likely to be high and sustained. One may wonder, when quality communication has such inherent advantages casting its multifaceted impact, what prevents the practice of quality communication between the doctors and patients?

BARRIERS TO DOCTOR-PATIENT COMMUNICATION

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 et al., 2007; Sutcliffe, Lewton, & Rosenthal, 2004). In a study on patients with abnormal mammograms, one third of the women in the sample reported not to have received appropriate follow-up (Poon et al., 2004). This indicates the barriers in communication can be possibly be caused by either the doctor or the patient or both.

In the context of doctor-patient communication, various socio-economic factors like age, gender, and educational qualification are seen to affect the communication. Studies identified that patients' age is a major determinant of the doctor's quality of listening (Govender & Penn-Kekana, 2007). In a study on elderly patients, it is found that doctors tend to communicate more in a patient-centered style with patients over the age of 65 years (Peck, 2011).

With regard to the gender, studies indicated an interaction between gender and income level posing a barrier in communicative style. A study conducted by Thorson and Johansson (2004) shows that woman patients of low income and status are described shy, hesitant and limited in their knowledge. They were found to verify with their husbands, family members and neighbours rather than adhering to the doctor's perception.

While the above study reported on differential behaviour by patients of two genders, there seems to exist a reciprocal relationship between the communication of doctors and patients. Bertakis, Franks, & Epstein, (2009) revealed that the doctors were more likely to have patient-centered style of interaction with female patients in comparison to male patients, suggesting that, women are more likely than men to express their feelings and talk about psychosocial issues.

The third barrier is educational level of the patient. 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. It was also found that highly educated patients are more expressive and opinionated. They also receive more diagnostic and health information than less educated people (Willems, De Maesschalck, Deveugele, Derese, & De Maeseneer, 2005). To sum up, it is likely that more educated, higher income and older patients receive more information because they have communicative styles that elicit information from the doctors.

It is 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, MugullaCawthon, Niesner, & Vaccarino, 2010; Katz, Jacobson, Veladar, & Kripalani, 2007).

Doctors are found to use medical jargons in their interaction with patients that is beyond the comprehension of patients. Doctor's use of complex medical language (Castro, Wilson, Wang, & Schillinger, 2007) may contribute to poor physician-patient communication. Extra care is to be taken while communicating with the patients in younger age group since younger participants have reported significantly lower level of knowledge of jargons than their older counterparts (Thomas, Hariharan, Rana, Swain & Andrew 2014). Cardiologists' communication involving jargons is, thus, not adequately reaching patients, specifically young adults. The use of such language leaves the patient confused and mystified, leading to poor comprehension of the doctor's instructions and consequently, inappropriate health behaviour that may bring about adverse health effects. A recent study on 96 preoperative patients reveals that usage of medical jargons leads to patient's dissatisfaction (Fields, Freiberg, Fickenscher, & Shelley, 2008). The usage of jargons distances the doctors from their patients and therefore it was suggested that the emphasis should be on interaction with the patients rather than telling the patients (Fields et al., 2008).

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.

In order to deliver patient-centered care, 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. The caring component in doctor-patient communication manifests in the doctors expression of empathy, reassurance, support, positive reinforcements, psychosocial talk, sense of humour, and extension of courtesy (Beck et al., 2002). Communication is a two way process. When

the doctor is not proactive in sharing and initiating, the patient lacks encouragement for questions. Disregard for the patient's views, incomplete sharing of medical data with the patient, guarded discussion of the treatment effects, low response to the patient's remarks, lot of interruption in patients' speech are indicators of poor sharing in doctors' communication (Beck et al., 2002). A study conducted on 167 patients who have interacted on computer with virtual physicians who are simulated to show high and low caring, the high caring was found to lead to higher patient satisfaction (Cousin, Mast, Roter, & Hall, 2012).

Patient feedback is a valid reflection of doctor's quality of communication. Often the patients are found to 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 about which the patients are aware (Pollock & Grime, 2002).

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

METHODS FOR ENHANCING DOCTOR PATIENT COMMUNICATION

Primarily, training sessions on communication skills for the doctors is suggested (Finset, 2012). Several studies have reported that training the doctors in communication skills to meet the biopsychosocial needs of the patients is imperative (Chatterjee & Choudhury, 2011). In its report 'vision 2015', the Medical Council of India (2007) stressed on the importance on communication skills training of the doctors. Doctors need to individualize their communication to patients based on patients' needs and desires (Lazarus, 2013).

The need of the hour is acknowledging and training the health care professionals in effective communication skills leading to improved health care system, sensitizing clinicians to respond to patients' emotional cues, encouraging doctors to communicate without/with minimal use of medical terminologies (Terpstra, 2012), facilitating feedback from the patients after consultation, accelerating the empowerment of the patients (Chana, 2012), teaching doctor-patient communication skills during undergraduate medical curriculum (Egnew & Wilson, 2010; Sommer, Rieder, & Haller, 2011), promoting listening by the doctors (Snyder, 2008; Jagosh, Boudreau, Steinert, Macdonald, & Ingram, 2011) and involving family members **(**Kuzari, Biderman, & Cwikel, 2013; Guenter, Gillett, Cain, Pawluch, & Travers, 2010**).** All these are found to contribute

towards a correct diagnosis, enhance healing, apart from boosting the doctor-patient relationship. While doctor-patient communication is given heavy emphasis and innovative interventions are suggested to enhance the quality, the crucial question around which the entire issue revolves relates to the method of measuring the quality.

MEASUREMENT OF DOCTOR-PATIENT COMMUNICATION

Measuring communication is a challenging task. 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 aspects such as information exchange, shared decision making, patient enablement, verbal dominance, and communication control (Collins, Britten, Ruusuvori, & Thomson, 2007). In qualitative approaches, the focus of measurement is on professional responsibility and behaviour, 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), such as the Roter Interaction Analysis System (RIAS), Brown University Interpersonal Skill Evaluation (BUISE), Communication Assessment Tool (CAT), and Doctor-Patient Communication Inventory (DPCI).

The qualitative approach uses the method of coding the videotaped content of clinical consultations. The measurement comprises of both the verbal and non-verbal behaviour. 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 and communication competence of the doctors.

The problem with the coding systems relates to arbitrariness of relationship between coded actions. For example, it fails to connect doctor's communication style to the patient's level of information about their diagnosis, prognosis and treatment options. Further it speaks nothing about how the length of the consultation might have influenced the discussion of issues between the doctor and the patient. Further, these methods fail to capture 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.

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. In a study on physician-patient communication behaviour on HIV patients in Kenya, Wachira, Middlestadt, Recee, Peng, and Braitstein (2013), reported that the MPI failed to capture the patient's role in the communication behaviours 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 such as the themes that discussed the interrelationship between the patient's concerns and the biomedical agenda. 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).

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. 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'.

NEED FOR QUANTIFICATION OF DOCTOR-PATIENT COMMUNICATION

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.

The discussion based on the review clearly suggests the cost effectiveness of doctor-patient communication in the present context of health care and management. Given the high doctor-patient ratio resulting in low consultation time, optimising the quality of doctor patient communication remains a challenge. The only way this challenge can be met is by integrating innovative techniques and approaches of validating doctor-patient communication in the medical curriculum, reinforced by in service training programmes and involvement of Health Psychologists in developing disease specific check lists and communication packages for use in consultation. However the major lacunae in evaluating the effectiveness of this would be appropriate tool and method of measuring doctor-patient communication involving the communicator and receiver on the one hand and covering the content, affect and behaviour on the other. Concerted efforts are called for in health care research to fill this void. Therefore a reliable and valid method for measuring bi-directional communication is the need of the hour to replace the unidirectional approach.

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Forgiveness: A determinant of adolescents' happiness

Suvashisa Rana, Meena Hariharan, Durgesh Nandinee and Kallavarapu Vincent
Centre for Health Psychology, University of Hyderabad, Hyderabad, Andhra Pradesh

As forgiveness plays a vital role in the process of building healthy relationship, this study explored the contributions of forgiveness on happiness among adolescents. A convenience sample of 200 adolescent participants from two leading educational institutions was selected. The participants completed a survey assessing the forgiveness (forgiveness of self, others, and situations) and happiness. The results revealed that there were significant contributions of forgiveness and its domains on happiness of the adolescents. The role of age was also found to be significant indicating that the older adolescents were found to be higher in forgiveness compared with their younger counterparts. Since there was an impact of forgiveness on happiness, adolescents need to be taught the prosocial behavior during childhood and adolescence in order to foster positive health, both at individual as well as community levels.

Keywords: forgiveness, healthy relationship, happiness, prosocial behavior, positive health

Adolescence a transitional phase between childhood and adulthood offers a plethora of experiences, emotions and feelings to the individuals to orient their personality throughout their life trajectory. However, among all the stages of life, except childhood, adolescence is the most noticeable phase due to rapid and potentially tumultuous transition (Williams, Holmbeck, & Greenly, 2002). Many researchers argue that these rapid and multiple changes bring heightened possibilities of outcomes, both in terms of positive and negative (Ketterlinus & Lamb, 1994; Pipher, 1994). Much emphasis is focused on the problematic outcomes of adolescents, whereas considerably less attention has been given to the positive changes that might occur during this phase. This study is an attempt to assess two major aspects of positive health of adolescents forgiveness and happiness where 'forgiveness' is considered as a process and 'happiness' as a product.

Forgiveness a prosocial behavior essential for long-term psychological health plays an important role during adolescence and is considered as an emotion-focused coping process that can promote health (Worthington, 2006; Worthington & Scherer 2004). As a prosocial act, it contributes to positive emotions (Fredrickson, 1998). Forgiveness is a moral response; so it involves more than simply ceasing to be angry or accepting what happens. It is often used as synonym to 'condoning'. When a person condones certain behavior, he realizes that the offender may have had an excuse for his actions. Conversely, when a person forgives, he clearly labels the offender's behavior as morally wrong, but accepts the person as having inherent worth despite the offense.

In general, psychosocial or behavioral factors exert their influence on health or illness in various ways (Rowe, 2001). Several studies examining physiological reactivity during imagined or recalled offenses found links to forgiveness. Lawler et al. (2003) found that recalled experiences of betrayal that were less forgiven were associated with greater cardiovascular reactivity. The state of forgiveness was also associated with self-reports of illness, hostility, and stress. On the basis of past evidence, consistently it appears that the state and trait of forgiveness are generally associated with better mental and physical health. Given these associations, researches have proposed theoretical models that could explain the relationships between forgiveness and health (Thoresen, Harris, & Luskin, 2000; McCullough, 2000). With the help of premise that forgiveness reduces hostility, Thoresen et al. (2000) enumerated six potential pathways linking forgiveness and health (1) a decrease in chronic blaming, anger, and hostility; (2) reductions in chronic hyperarousal and/or allostatic load; (3) optimistic thinking; (4) self-efficacy to take health-related actions; (5) social support; and (6) transcendent consciousness. Along with forgiveness, happiness a bi-product of multifarious factors plays a significant role in maintaining and sustaining individual's health physical, psychological, social, and spiritual.

Happiness a composite of life satisfaction (Diener, Lucas, & Scollon, 2006), coping resources (Lyubomirsky, King, & Diener, 2005), and positive emotions (Fredrickson, 1998) predicts desirable life outcomes in physical, psychological, social, and spiritual domains in every phase of the life span. Happiness is understood in terms of two perspectives hedonic and eudaimonic. Between hedonic and eudaimonic happiness (Ryan & Deci, 2001), hedonic happiness is the relatively shorter-term evaluation of present day happiness as a balance within positive and negative affect, pleasure attainment and pain avoidance. Eudaimonic happiness is the longer-term psychological well-being resulting from the engagement with individual development and the existential challenges within life, meaning and self-reflection (Keyes, Shmotkin, & Ryff, 2002; Ryan & Deci, 2001). Happy people become more satisfied not simply because they feel better, but because they develop resources for living well (Cohn, Fredrickson, Brown, Mikels, & Conway, 2009). Forgiveness is such a resource that paves the way for better living in the community by enhancing interpersonal positive relationships. Age, gender, personality, race, and culture are few of several important factors which influence the tendency of an individual to forgive self, others, and situation.

The main objective the study was to investigate the impact of forgiveness on happiness among adolescents. To address this objective we begin with the definition of forgiveness as a 'prosocial change toward a perceived transgressor' (McCullough, Pargament, & Thoresen, 2000). Victims who forgive their offenders become motivated to act prosocially toward them by reconciling their differences, cooperating on interdependent tasks, and admonishing

Correspondence should be sent to Dr. Suvashisa Rana
Assistant Professor, Centre for Health Psychology
University of Hyderabad, Hyderabad, Andhra Pradesh

ill will. Victims who fail to forgive their offenders conversely become motivated to act antisocially by avoiding them or even taking revenge. It is presumed that unforgiveness precedes forgiveness that offenses instil antisocial motivations within their victims, which are subsequently transformed, such that victims become increasingly motivated to act pro-socially toward their offenders. For the present purpose, we focused on forgiveness of self, forgiveness of others and forgiveness of situation. In general, self-report measures of the propensity to forgive (and, the propensity toward vengeance) are correlated positively (or, conversely, negatively) with measures of mental health and well-being (McCullough et al., 2000). They found that low scores on forgiveness of self were more strongly related to depression, anger, anxiety, and low self-esteem than were scores on the forgiveness of others scale. This suggested that people who had a propensity toward feeling forgiven were less prone to experience such psychological difficulties.

Research findings state that forgiveness, as understood in terms of altruistic motives, affects both physical and mental health (Witvliet & McCullough, 2007; Worthington & Scherer, 2004). Forgiveness is a process (or the result of a process) that involves a change in emotion and attitude regarding an offender. Most scholars view this as an intentional and voluntary process, driven by a deliberate decision to forgive (Enright, Santos, & Al Mabuk, 1989; Fincham, 2000). This process results in decreased motivation to retaliate or maintain estrangement from an offender despite their actions, and requires letting go of negative emotions toward the offender. Research findings suggest that failure to forgive is an indicator of poor mental health, such as depression and anxiety (Maltby, Macaskill, & Day, 2001; Brown, 2003; Karremans, Van Lange, Ovwerkerk, & Kluwer, 2003). Hence, the study was aimed to explore the impact of tendency of forgiveness and its domains (forgiveness of self, forgiveness of others and forgiveness of others) on happiness. The study also focused on understanding the adolescents' tendency of forgiveness during two different phases early and late adolescence.

Method

Participants

This observational study used the tendency of forgiveness and its domains as predictors and happiness as criterion by involving participants who were in their early and later phases of adolescence. There were 200 participants selected from the student population from two well-known academic institutions of Hyderabad city in India by means of multi-stage sampling method. Out of the total 200 participants, 100 (47 girls and 53 boys) were in their early adolescence phase (13 and 15 years) and 100 (63 girls and 37 boys) were in their late adolescence phase (18 and 20 years). Out of 200 participants 38% participants were staying in hostels, 37% in own houses and 25 % in rented houses. The educational level of participants was also varied, such as 0.5% were from Class VIII, 28% from Class IX, 21.5% from Class X, 20.5 % from first year of integrated masters and 29.5% were from second year of integrated masters courses. So far as the age of the participants was concerned, 20.5% were from 13 years of age, 21% from 14 years, 8.5% from 15 years, 26% from 18 years, 16% from 19 years and 8% were from 20 years of age.

Instruments

In this study, the following instruments were used along with separate sheets containing informed consent form and demographic details of the participants.

Heartland Forgiveness Scale (HFS): The HFS (Thompson, Snyder, & Hoffman 2005) consisted of 18 items. It was a self-report questionnaire which measured person's dispositional forgiveness (i.e., the general tendency to be forgiving), rather than forgiveness of a particular event or person. The scale consisted of three domains, such as forgiveness of self, forgiveness of others and forgiveness of situations, each containing six items. Each of the items was rated in a 7-point scale ranging from 'almost always false of me' to 'almost always true of me'. Scoring was done as per the procedure laid down in the manual. The total score varied from 18 to 136. The internal consistency was found to be between .71 to .82 (Bugay, Demir, & Delevi, 2012).

Oxford Happiness Questionnaire (OHQ): Consisting of 29 items, OHQ (Hills & Argyle, 2002) a uni-dimensional scale, measured the level of happiness of the participants. Each item presented as a single statement which can be endorsed on a uniform 6-point Likert scale ranging from 'strongly agree' to 'strongly disagree'. The scale consisted of roughly equal numbers of positive and negative items. The sum of the item scores is an overall measure of happiness, thus the total score varied from 29 to 174, with high scores indicating greater happiness. Cronbach's alpha was .79 in this sample.

Demographics: Participants completed a demographic questionnaire, asking them to self-report their gender, age, name of the educational institution, name of the course, and type of accommodation.

Procedure

Two leading educational institutions were identified basing on the convenience of the investigators. The investigators approached to the heads of the institutions in order to get permission to involve their students in this study. After obtaining the permission, the students who met the criteria were selected randomly from their classes concerned. The investigator established rapport, and explained the purpose and relevance of the study to each of the selected participants individually. Then the informed consents of the participants belonging to the late phase of adolescence were obtained whereas for the participants belonging to the early phase of adolescence, the consents were taken from the institution. The measures were administered in groups. The selected participants were asked to assemble in a quiet classroom batch-wise and handed over the HFS and OHQ with demographic questionnaire. They were requested to fill the scales honestly and accurately. The investigators communicated in English, and whenever necessary they also used regional languages. The duration of the administration was approximately 20 to 30 minutes. Debriefing was done by the investigator soon after the participants completed the measures.

Results

To find out the independent contribution of forgiveness and its domain to happiness, simple linear regression analyses were done separately. To run simple linear regression analysis, the basic assumptions of linear relationship between the predictor (forgiveness) and criterion (happiness) were established. The results of simple linear regression analysis presented in Table 1. It is evident from Table 1 that forgiveness explained statistically significant (28%) proportion of the variance in happiness, $R^2 = .28$, adjusted $R^2 = .28$, $F(1,198) = 79.32$, $p<.001$. The relationship between forgiveness

and happiness was positive, β =.54, p<.001, with increases in forgiveness being associated with more happiness among adolescents. The analysis further revealed that statistically significant (15 %) proportion of the variance in happiness was explained by forgiveness of self, R^2 = .15, adjusted R^2 = .15, F(1,198) = 30.24, p<.001. The relationship between forgiveness of self and happiness was positive, β = .38, p<.001, with increases in forgiveness of self being associated with more happiness. It was also revealed that forgiveness of others explained statistically significant (13%) proportion of the variance in happiness, R^2 =.13, F (1,198) = 30.14, p<.001, whereas forgiveness of situation explained statistically significant (16%) proportion of variance in happiness, R^2 =.16, F (1,198) =37.56, p<.001. The relationship between forgiveness of others and happiness (β=.36, p<.01), and forgiveness of self and happiness was found to be positive (β=.39, p<.01).

Table 1: Summary of simple regression analyses for forgiveness and its domains predicting happiness (N = 200)

Criterion	B	SEB	β	SE	R^2	F
Forgiveness	0.81	.09	.54***	14.73	.28	79.31***
Self	1.38	.24	.38***	16.10	.15	30.24***
Others	1.02	.18	.36***	16.24	.13	30.14***
Situation	1.35	.22	.39***	15.99	.16	37.56***

Note. ***p<.001

Since forgiveness and its each of the domains were found to be separate significant predictor of happiness in adolescents, a simultaneous multiple linear regression analysis was done by taking all the domains of forgiveness as predictors. The results are presented in Table 2. The results revealed that the combined predictors explained 29 % of the variance in happiness, R^2 = .29, adjusted R^2 = .28, F(3,196) = 27.21, p<.001. All the three domains of forgivenessforgiveness of self (β =.26, p<.001), others (β=.21, p<.001), and situation (β =.29, p<.001) were significant predictors, where forgiveness of situation was found to be the most dominant predictor.

Table 2: Summary of multiple regression analysis for variables (domains of forgiveness)

Variables	B	SEB	B
Forgiveness of self	0.95	.23	.26***
Forgiveness of others	0.58	.18	.21***
Forgiveness of situation	1.01	.21	.29***
R^2	0.29		
C	54.57		
F	27.21***		

Note. ***p<.001

Since forgiveness was found to be a significant contributor for happiness, further enquiry was made to know whether the male and female adolescents across the two phases of their lives were homogenous in respect of their tendency of forgiveness. A 2 (phase of adolescence) x 2 (gender) two-way between-subjects ANOVA was run and the results are presented in Table 3.

Table 3: Summary of 2x2 ANOVA on forgiveness and its domains

Variables	Early adolescence phase		Late adolescence phase		F-values		
	F	M	F	M	Phase (P)	Gender (G)	P x G
Forgiveness	78.00	75.77	82.21	81.95	10.28**	<1	<1
	(9.79)	(9.42)	(12.63)	(12.71)			
Self	26.57	24.53	28.32	28.14	16.38**	2.84	1.99
	(4.69)	(4.13)	(5.02)	(4.32)			
Others	29.09	27.55	29.24	28.76	<1	1.29	<1
	(5.73)	(5.82)	(6.39)	(6.82)			
Situation	22.34	23.70	24.65	25.50	6.28**	1.45	<1
	(4.15)	(4.92)	(5.68)	(5.30)			

Note **p<.01

From the Table 3, it is evident that the main effect of phase of adolescence on forgiveness was significant, F(1,196) = 10.28, p<.01, indicating that the participants of late adolescence phase were significantly better in forgiveness (M = 82.11, SD = 12.59) than that of the participants of early adolescence phase (M = 76.82, SD = 9.61). Neither the main effect of phase of adolescence nor the phase of adolescence x gender interaction effect was found to be significant.

From the table it is evident that the main effect of phase of adolescence on forgiveness of self was significant, F(1,196) = 16.37, p<.01, indicating that the participants during the late adolescents phase were significantly better in forgiveness of self (M = 28.25, SD = 4.74) than that of their early adolescence phase counterparts (M = 25.49, SD = 4.49). The main effect of phase of adolescence on forgiveness of others was not significant, F(1,196) <1, indicating that the participants during early adolescence phase (M = 28.27, SD = 5.79) and late adolescence phase (M = 29.06 , SD = 6.51) were homogenous in forgiveness of others. The main effect of phase of adolescence on forgiveness of situation was significant, F(1,196) = 6.27, p<.01, indicating that the late adolescents were significantly better in forgiveness of situation (M = 24.80, SD = 5.52) than that of their younger counterparts (M = 23.06, SD = 4.60). The main effect of gender was significant neither on forgiveness nor its individual domains, indicating that both male and female adolescents were found to be almost equally forgiving. Likewise, the interaction effects of phase of adolescence x gender on these were not significant.

Discussion

From the results a significant positive linear relationship is evident

between forgiveness and happiness during adolescence. Forgiveness helps in maintaining eudaimonic happiness through engaging in positive behaviours (Maltby, Day, & Barber, 2005). Forgiveness and its domains individually contribute significantly to happiness of adolescents, thereby acting as individual determinant of happiness. The phase of adolescence also plays a significant role in forgiveness of self and forgiveness of situation among adolescent students. Kohlberg's (1958) model of 'stages of justice and stages of forgiveness development' focuses that as people grow older they develop a greater tendency to forgive. Earlier findings also suggest that students during their late adolescence are found to be more forgiving compared to their early adolescence counterparts (Rana & Nandinee, 2013). The results also indicate that gender does not play a significant role in forgiveness. The observation is corroborated with the findings that women and men are equally forgiving (Toussaint & Webb, 2005).

Traditionally, adolescence has been viewed as a period of growing autonomy from the family, in which the influence of the peer group gradually control the influence of parents, mostly as the result of intergenerational conflict over fundamental values, norms, and behaviors (Coleman, 1961). Theorists speculate that parents influence a child's moral and prosocial development in many ways; these include providing information about desirable ways to behave, direct modeling of prosocial behavior, encouraging and directing appropriate behavior, punishing inappropriate behavior, and creating an affective climate that encourages (or discourages) empathy development (Eisenberg & Murphy, 1995). Researches exclusively focus on prosocial behaviour and its consequences, and is found out that forgiveness is positively correlated to other prosocial behaviors and motivation towards the offender. This lead to the positive outcomes (mastery, empathy, emotional intelligence, life satisfaction, forgiveness, and spiritual experience), and health and well-being during the entire life span of the person. Forgiveness is conceptualized as an emotional association of positive emotions (empathy, sympathy, compassion, or love) against the negative emotions of unforgiveness. Forgiveness can thus be used as an emotion-focused coping strategy to reduce a stressful reaction to a transgression. Empirical research suggests that forgiveness is related to health outcomes and to mediating physiological processes in such a way as to support the conceptualization that forgiveness is an emotion-focused coping strategy. Indirect mechanisms might also affect the forgiveness health relationship. Moreover, forgiveness might affect health by working through social support, relationship quality, and religion (Worthington & Scherer, 2004). Considering the role of forgiveness, research findings state that forgiveness interventions are appropriate for, but infrequently used in medical settings (Harris & Thoresen, 2005). Forgiveness is also considered as an act of self-therapy (Smedes, 1984). The person can improve his or her mental health, relationships, and perhaps even spiritual health through forgiving (Exline & Martin, 2005; Harris & Thoresen, 2005; Toussaint & Webb, 2005). Thus, the findings would help in promoting and sustaining the positive health by inculcating the tendency of forgiveness during adolescence, which later on becomes a source of happiness in life. The findings would also show a direction to add forgiveness and happiness as a part of imparting value education during adolescence.

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Story: An aid to positive child development

Suvashisa Rana, Meera Padhy, Ruth Angiel Padiri, Durgesh Nandinee and Kallavarappu Vincent
Centre for Health Psychology, University of Hyderabad, Central University, Gachibowli, Hyderabad

This theoretical paper highlights how story plays a multi-faceted positive role on the developmental process of the child. Listening, reading and writing stories foster child's perception, memory, thinking, language, intelligence, feeling and emotion. Piaget and Kolhberg have used story to find out the aspects of moral development. Through stories the child also learns to communicate effectively and strengthens interpersonal relationships. By listening and reading stories about great personalities, the child involves in role-taking behavior where he/she puts him/herself into another person's (role-model) position and imagines how that person thinks, feels and behaves. Stories are also used for therapeutic purposes for all age groups. Widely accepted projective tests, like Children's Apperception Test, Thematic Apperception Test, analyse an individual's personality through stories. There are many indigenous examples, where we find the relevance of story and parables in shaping the behavior of the child and the overall development of personality. Story, as an aid to positive child development, has a wide implication for the physical, psychological, social, moral and spiritual development, not only during childhood, but also its ripple-effect could be observed during later phases of life.

Keywords: story, developmental process, moral development, positive child development

Story: An aid to positive child development

Human beings organize intentions, experiences, and memories of life events mostly in the form of stories, myths, and excuses and so on; these stories become their version of reality. Story is a schema through which human beings give meaning to their experiences of temporality and personal actions (Polkinghorne, 1988). The consciousness of ourselves is constructed out of both the stories we tell about ourselves and the world, and from the stories we come to believe, of what others tell about us and the world (Parry, 1997). The existence of a person as a narrated identity is a modern invention. An individual has a conscious, intentional relationship with himself and engages himself in the pursuit of a new ego. Freud rediscovered and applied the power of stories as a method to redirect a life that is lost in fragmentation and incoherence, by simply asking the individual to tell his/her stories. We believe the stories that we tell ourselves to be the truth, which creates a world that is defended because it upholds our identity. This paper focuses on the potential that stories have and their active role in the holistic positive development of children.

Story: Meaning and aspects

A story is a particular kind of narrative discourse identified by its structure, features, content, and language. Structurally, a story contains three basic interrelated elements, such as the story-setting, character(s), and a plot which has a series of events. The development of one affects the development of the other. A character's nature is expressed or manifested through his/her actions and the decisions he/she takes. These decisions and action form the core of the story - the plot. Every story has a theme (meaning, message or an idea), and the element of time which is continuous, or spread across time. Stories can be true stories or fictitious tale, in prose or verse, short or elaborate as novel.

The functions of vision and voice are hallmarks of storytelling, especially of the epic story-telling where the story is presented within the context of the narration. This implies that the narrator of the story not only has a vision to tell, but also a typical way of telling it for the benefit of the audience. A story can be presented, represented, and/or communicated through any one or a combination of the following methods - (1) actions, dance form, drama, (2) three-dimensional toys, puppets, models, and other play materials, (3) colorful or achromatic line drawings, pictures, and/or paintings, (4) oral language such as narration, dialogues, songs, etc, and finally (5) written language.

Story: Concept and structure

The concept of story is a mental representation of the story structure, and essentially the organization of the story elements, such as the setting, the character (s), and the plot. Many adults and children seem to use the knowledge of story structure to cognitively process the text; i.e., to understand and remember the stories (Kintsch, 1977; Mandler & Johnson, 1977; Rumelhart, 1978; Stein, 1976, 1979; Stein & Glenn, 1977) and to anticipate forthcoming information (Applebee, 1978; Whaley, 1981).

Mandler and Johnson (1977) categorize the story structure into six major categories of narrative information, such as the setting, beginning (a precipitating event), reaction (the protagonist's reaction and setting of a goal), the attempt (effort to achieve the goal), outcome (the success or failure of the attempt), and ending (the long- range consequence of the action sequence or the added emphasis). The events from the beginning to the end together make an episode. Relationship between the categories and the episodes determine the complexity of a story (Johnson & Mandler, 1980; Mandler & Johnson, 1977). Story schema - knowledge of the story structure involves identification of the story elements and their interrelationship (Mandler & Johnson, 1977; Rumelhart, 1978; Stein & Glenn, 1979; Thorndyke, 1977). Children's schema of a story evolves as more and more stories are told to or read to them, and as they attempt to create stories of their own. Starting with simple narratives, children begin to form and recognize predictable structure of stories, which helps them to anticipate events and endings. Studies indicate that individuals do have a sense of an idealized story which involves the knowledge of the structural features (Botvin & Sutton-Smith, 1977).

Correspondence should be sent to Suvashisa Rana, Centre for Health Psychology, University of Hyderabad, Central University PO, Gachibowli, Hyderabad

Types of story

Broadly there are three types of stories, such as personal experiences, traditional and created stories. Stories about personal experiences are a narration of significant events and experiences of an individual, conveying their perspective and meaning of the particular event and their subjective feelings about it. Traditional stories include folk tales (timeless, placeless, and characters that are well-known to a culture), fairytales (having a magical element), legends (historical stories of the past with a divine element), epics (long stories of the adventures of the protagonist as they travel from one place to other), and myths (stories about divine characters concerning the creation of the physical world). Created stories are often a combination of personal experiences and traditional stories.

A child's intellectual development, apart from its immediate experiences within the family, depends upon mythical, magical, fairy tales, and religious stories. Myths and closely related religious legends offer rich materials from which children form their concepts of the world's origin, purpose, social ideals, and follow their life patterns by modeling/imitation afterwards. Myths, legends and stories of mystery and adventure offer a blend of fantasy and realism which young children find totally acceptable and which they readily recreate in their own stories. Different types of stories contribute to the understanding of different aspects of the world, about others, self, cultures and life patterns.

Thus stories give meaning to life and its experiences. Stories are used to teach the young about values, their culture, history, and help individuals to gain understanding of oneself and others (Miller, 1996). There are developmental trends observed, in the acquisition of a story schema, as children grow, their knowledge of a story becomes richer and elaborate (McClure, Mason, & Barnitz, 1979; Sutton-Smith, Botvin & Mahoney, 1976).

Story: An aid to positive child development

Storytelling is truly an artistic enterprise. Integrating images with words, vision with voice, and inner and outer worlds, storytelling offers experiential transformations and therapeutic values that are both productive and experientially futuristic (Parker, 1998). About a decade ago, early childhood specialists were of the view that children are rooted in the present. Studies had shown that toddlers show interest in what they can see and do at the moment, and are unable to think about events of the past or those that will happen in the future. But over the past few years a number of studies have shown that, parents and their babies frequently talk to each other in great depth about the past and future (Nelson, 1989; Engel, 1995). It was popularly believed that young children show interest in highly imaginative stories, however there is evidence that they prefer stories that 'could happen', with an element of unreality about what actually happened or could happen in the future (Beetelheim, 1972; Emans, 1968; Helson, 1973).

The young child likes to be read to, to look at pictures on books or comics. Most young children enjoy and prefer stories about fairies, everyday occurrences, familiar people and animals, for their personal qualities or their humor and have a special appeal as they are able to identify with them (Babbitt, 1970; Helson, 1973). Young children being egocentric like stories that center around themselves. They are fascinated about stories which tell them about how they digest their food, or how their nails grow. Regardless of the intellectual level, all children enjoy comic books, humor or adventure-oriented, as they are amusing, exciting, easy to read and stimulates the child's imagination.

Culture influences the reading interests of older children. They read books that are gender-appropriate. Those from middle and upper socioeconomic groups read what their parents and teachers think appropriate, while children from lower groups read as per their wish with minimum parental supervision. They prefer books and magazines that features adventure and identify with the hero. They tend to prefer pleasant settings and positive group interactions with happy endings and dislike anxiety-producing elements. Older children become more realistic as they grow intellectually. They lose interest in fantasy, stories of animals, fairies and consider them to be 'phony'. Based on their age, reading abilities, interest and personality pattern they turn their interests to adventure and violence; glamour and love, and educational topics.

Story telling is an essential, perhaps the essential activity of human beings (Engel, 1995). It serves a myriad functions in all aspects of the developmental process of children. Listening, reading and writing stories have a multidimensional role on all aspects of a child's personality. Development refers to the qualitative and quantitative changes. It can be defined as a progressive series of orderly, coherent changes. “Progressive” signifies that the changes are directional, that they lead forward rather than backward. “Orderly” and “coherent” suggest that there is a definite relationship between the changes taking place and those that preceded or will follow them (Anderson, 1971; Baumrind, 1972; Schneirla, 1971).

Story and psychological development

Language.Stories aid the development of communication, imaginative and linguistic development by introducing unfamiliar words in the narrative context. The conversations between a mother and child contributed to child's literacy in terms of learning concepts, vocabulary, improved story comprehensionand predicted better reading skills. It also helped children to develop assertiveness, to voice out their opinions (Reese, 1995; Robbins & Ehri, 1994; Schwanenflugel, Hamilton, Bradley, Ruston, & Restrepo, 2005). An empirical study by Smogorzewska (2014) on 5year children revealed that story telling was an effective strategy in developing children's language creativity. Stories also developed concentration and listening skills. Stories introduce narrative structure and helps children to voice their thoughts and ideas in their own language.

Memory

Illustrations as well as the text facilitate and enhance memory and reading comprehension by developing their cognitive and linguistic maturity. However, children perform better in memory and comprehension through self reading than only visual or auditory presentation. Children are found to be capable of replacing wrong words with appropriate or correct words in order to understand and construct a familiar and meaningful story. Existing research reveals that when children read a story, they learn most of their vocabulary through exposure to words used by more advanced language users (Bloom, 2002) and that mothers' use of children's existing attentional focus and semantic contingency supports children's language acquisition which also enhance their memory.

Reading and writing ability

Children who are introduced to stories and books can read efficiently and at a higher level. They develop the competency to

understand ideas, concepts, structures and individual stories. Reading in turn helps children in writing as they grasp the rules and structure of language quickly. Oral proficiency aids in learning spellings and grammar. Storybook reading is one of the most studied formats for increasing language learning in children and also help to improve their reading comprehension. Many research studies have shown that children make significant gains in various areas of development through shared storybook experiences (Isbell, Sobol, Lindauer, & Lowrance, 2004).

Thinking and problem solving skills

Many children lack people whom they admire and identify with, by reading or listening to stories they find sources of identification which suit their needs and motivates them to mould their personalities. In these positive modeling stories the protagonist has similar traits of the child, models realistic thinking and problem solving in their thoughts, feelings and behavior. This helps children to gain insight into their own problems and gives them realistic ideas to solve their problems (Strayhorn, 1988).

Creativity

Regardless of the medium or themes, reading stories increases the child's creativity, broadens their interests and helps in acquiring new knowledge, and lays foundation for their own creative activities. Story fosters the divergent thinking process of the child as a result it helps the child in problem solving.

Moral development

Stories contribute a lot in the moral and ethical development of children. According to Piaget (1932), children's conception of morality develops in two major stages: morality of constraint and morality of cooperation, which coincide approximately with the preoperational and operational stages. Children go through these moral stages at varying times, but the sequence remains the same. Piaget (1932) had used story to find out process of moral development. He concluded that immature judgments are egocentric, while mature judgments are intentional. Kohlberg (1969) studied a group of boys for 20 years who were between the ages of 10-16 years by presenting them with different stories. These stories posed hypothetical moral problems about unfamiliar people and asked how they would solve them. At the centre of each dilemma was the concept of justice. Kohlberg then asked the boys questions to find out how they came to their conclusions. He sought to find out the reasoning that led to the answers than the answers themselves. Thus he concluded that though the boys had different answers they were at the same level of moral development if their reasoning was based on similar factors.

Reading stories to children is one of the most important contributions that parents can make to develop a good character. Stories hold the potential to create an emotional attachment to goodness, and incline them towards right things. Stories also provide the kind of examples that are often missing from the child's day to day environment. They familiarize children about the code of conduct and help them to make sense out of life. Stories make a deep impact as they touch upon the imagination, creates a mental image of the moral principle that moves the child to abide by it. Stories enable children to rehearse moral decisions, and strengthen their solidarity with good (Kilpatrick, Wolfe & Wolfe, 1994) by gaining an insight into their own emotions; children also become aware of other's emotions and understand them in a mature way. Selman (1980) describes the development of perspective-taking as an aspect of moral development in five stages by illustrating a story. Perspective taking refers to putting oneself into another person's position and imagining how that person thinks and feels.

Emotional development

Stories help in organizing events of the past, and convey significant information about feelings and family relationships. Children tell stories to solve emotional, cognitive, and social puzzles to sort out problems or concerns. Daily story time sessions with pre-school children improves their cognitive skills significantly and reduces their socio-emotional difficulties by the age of five. Stories stimulate emotional development, through vivid imagination they can experience their emotions in a safe environment and discover different perspectives and situations outside their environment. Studies conducted on Baltimore families show that children tend to narrate upsetting events of the past to their parents. Such stories facilitated two levels of emotional transaction: one, a replay of the situation and whatever they have gone through, second, the emotional response they elicit upon telling the story (Miller & Sperry, 1988). According to Bruner (1983), stories play the role of cooling vessels, by which emotionally and cognitively powerful experiences can be re-constructed with less impact than they originally had. Children benefit by retelling the experience in a safe environment, and the adult's response makes the narration cathartic and therapeutic by resolving traumatic experiences and the resultant anxiety. Stories and storytelling help in developing positive character and emotions by promoting a sense of shared experiences and challenges dealt by the characters in the stories (Jalongo, 2004).

Development of self identity

As children share their stories about their day to day events, they narrate their inner life, develop their identity and share this with others. By the means of storytelling children create an extended self and the rich repertoire of stories give the child a sense of self across time and situation. In the process of sharing about oneself, one weaves together the underlying, established inner self with many different aspects of self that emerge in a situation.

As children share, they organize their world and make sense of life, in their own unique way. They are encouraged to participate in a social situation, feel emotionally empowered and this builds their self esteem. The social interaction that emerges leads towards sharing and relationship-building (Bruner, 1986).

Story and social development

Through stories children learn about their culture, its practices and beliefs and adapt themselves by internalizing its values. They learn how to interact with parents, siblings, friends, members of the opposite sex, different roles, importance of education achievement, social service and responsibilities of a citizen. Studies have shown that the ability to converse and tell stories emerge not only from social interaction but also from the input of conversational partners (Snow & Ferguson, 1977, Miller & Sperry, 1988). Children learn from the protagonist's determination and success in the story, which acts as a vicarious reinforcement for the child. This motivates the child and strengthens the positive behavior.

Story and educational benefits

As children enter school, their talents for imagery and illusion are under-utilized though they are accomplished storytellers and fantasy

players (Paley, 1995). Teachers and educational researchers consider stories as one of the most effective teaching methods (McEwan, Hunter, & Egan, 1995). Reading stories can be considered not just as a support but as integral to the process of on direct teaching of informal learning, enabling children to develop literacy skills and concepts (Peters, 1993). Stories encourage children to become self-sufficient and develop resources within themselves so that they learn to enjoy their free time when playmates are not available. Such resources have lifelong benefit. Reading for fun forms healthy attitude towards reading that will impact their school work and also increases reading proficiency which will be an asset in all their studies. Storytelling has been used as a tool to develop ethnic identity and literacy education of African-American students (Baber, 1992).

Story and Indian culture

Since ages, stories, folklores, folktales have been part of every culture. India has a varied range of stories, mythological legends, which emerge from all walks of life. Epics, like the Ramayana, the Mahabharata, are full of stories inspired by the lives of great saints. These stories and epics which are full of moralistic values are used to teach children about the culture and values. These ancient stories which have been passed from generation to generation have created a strong bond of traditional values with contemporary generation.

Originating a thousand years ago, Hitopadesha, composed by NarayanaBhatta, is a remarkable compilation of short stories, written in prose and verse is one of the many examples. Originally written in Pali language, the Buddhist Jataka tales were written to impart knowledge, moral values like self-sacrifice, honesty, and integrity. The Panchatantra is a legendary collection of short stories, compiled by Vishnu Sharma which is used to educate the individuals, even in present day scenario.

These include fables involving animals as well as humans, set in situations of everyday life in towns, villages, palaces, farms, and forests. The characters enact the foibles, follies, virtues, and vices of human conduct. They utter wise words and perform good deeds as well as indulge in every kind of sharp practice. The stories are composed to impart moral values, life skills and teach statecraft and the rules of politics in an attractive, simple and effective way, both in prose and verse. They act as an effective measure to develop and shape the personality of individuals.

Great people like Buddha, Ramakrishna, and Vivekananda have used parables to educate their disciples. In Vedas and Upanishads, one can find many instances where story has been used as a medium for education, development, communication and entertainment.

Story: A medium of psychological assessment

In many cultures, people understand and express their sense of self through stories, and these stories are important source of self-definition, which are spread across time and space. Assessment tools where individuals are assessed based on the recollection of word pairs in the laboratory memory studies, or rating adjectives on a personality inventory do not tap into the narrative aspect of human thought.

The study of narratives in psychology can be traced back to the works of Freud, Adler, Murray, Erikson, Levinson, Stewart, and Baumeister (Stewart, Franz, & Layton, 1988, Baumeister, Wotman, & Stillwell, 1993) who considered personal narratives as 'portals' of an individual, through which one can discover vital information about their personality and development (Linde, 1993; Singer, 1996). Projective tests, one of the personality assessment tools, assess personality characteristics by emphasizing the role of stories, use standard sets of stimuli, such as incomplete sentences, pictures, or inkblots which are relatively ambiguous. As the individuals respond to these stimuli, they project their feelings, perceptions, needs and motives, and the unconscious mind which reveal important aspects of personality.

Murray's (1938) Thematic Apperception Test (TAT) used storytelling as a tool to understand an individual's unconscious needs, motives through the themes present in their stories, told in response to different pictures. The TAT was also used by McClelland and his colleagues in their work on “n- Achievement” and extended Murray's ideas. The Rorschach Ink-blot test, assesses personality based on the responses of individuals on a series of inkblots, helps individuals express their hidden desires and thought patterns.

The works of Bruner (1986), Tomkins (1979), Polkinghorne (1988), and Sarbin (1986) asserted the concept, of a different mode of thought that organized information through the familiar devices of story, including plot, intention, character, outcome, and theme. According to Bruner and Sarbin (1986), stories are lifelike, with an imaginative quality, concerned with the individuals' intentions and the consequences that mark their course.

Therapeutic implications of story

Stories play a significant role not only in positive development of the child but also are therapeutic in their role. Mediated storytelling (including prompting, scaffolding, elaboration, and active engagement in story reconstruction) could increase knowledge, improve listening comprehension of de-contextualized language, sense of story structure, and oral development in young children with learning disabilities (Morrow, Sisco, & Smith, 1992). Story is used as a tool of behavior modification; stories of Panchatantra are one such example. A child having inadequate attention and concentration is often controlled by stories.

Stories, fairy tales with different themes exit in every culture, and serve an important sociological purpose. Based on the different themes, stories may serve to address major fears of children such as separation anxiety, loss, death, and other human predicaments in the safe environment of their loved ones. Through this, they understand their fears and learn to cope with effectively by modeling the protagonists in the stories or tales.

Most of the stories and fairy tales show good triumphing over evil, the duality of this situation demands a struggle and its resolution. Children prefer these stories as they address those fears that children cannot even articulate (Bettelheim, 1976)

Research findings state that by hearing stories, adolescents tell about their lives, therapist can enter their world and facilitate the generation of alternate meanings. The findings focus on the development of therapy styles that expand adolescent's world to include perspectives and alternates previously unavailable. Therapists' primary task is to become skilled at facilitating therapeutic conversations, while maintaining the “not knowing stance”, being open to and generating alternatives, thinking in terms of both/ and rather than either/or, assuming the adolescent has strength and resources, being aware of their own values, and working with the individual rather than the label (Biever, Mckenzie, Wales-North, & Gonzalez, 1995).

Play therapy techniques, when used in family therapy context, highlight three specific interventions: therapeutic rituals, storytelling, and the use of puppetry. Through these techniques, a family's interactional patterns can be understood and new meanings can be generated, and interventions applied (Schats, 1998).

Stories as a therapeutic tool can be used in more severe and sensitive contexts such as providing therapy for a sexually abused child, who cannot articulate or finds it difficult to do so. Herman (1977) delineated a therapeutic case of a four year old, sexually abused girl, who identified covert sexual themes in the video version of traditional children's fairy tales. The child used the tales in dramatic form as a distracting technique to tell her therapist about the traumatic events of the past; i.e. the sexual abuse she experienced by her father. In this manner, the child was able to find both an appropriate context and a process to discuss her concerns with the therapist and learn new ways of relating to her abuse.

Story has a wider implication for the positive child development in the physical, psychological, social, moral and spiritual domains, not only during childhood, but also its ripple-effect could be observed during later phases of life. The paper would help in designing early intervention programme for the inclusion of story into the teaching modules in school. For fostering child rearing practices, parents could be trained to use story as an instrument of behavior modification. Story also could be used as an effective intervention for maintaining and sustaining overall health behavior of the child.

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Relationship among Body Mass, Self-esteem and Depression in Overweight Indian Adolescents: Role of Binge Eating

Deepthi, A., Praveen, K.K., Chandrashekhar-Rao, P., Vincent, K., and Kishore, M.T.,
University of Hyderabad, Hyderabad.

The problem of overweight is increasing among the adolescents. While overweight is associated with physical and physiological complications, emerging evidence suggest that it is also associated with psychological problems, particularly low self-esteem and depression. But the association with psychopathology is reported to be mediated by binge eating. In this context, the present study examines whether binge eating has any role in the relationship between body mass and self-esteem and depression in overweight adolescents. Accordingly, 39 overweight adolescents and 39 normal weight cohorts in the age range of 12-17 years were recruited in the study through purposive sampling method. Participants were assessed with standardized tools of binge eating, self-esteem and depression. The results indicated that binge eating mediates the relationship between body mass and psychopathology. This study suggests that binge eating is an important variable in the context of overweight and psychopathology. Implications of the same for the management of weight-related psychopathology in adolescents are discussed in detail.

Keywords: Adolescents, Binge eating, Body mass, Depression, Overweight, Self-esteem.

In is estimated that 14% of the population in south-east Asia is overweight while an additional 3% may have obesity (World Health Organization, 2011). Overweight and obesity once considered problems of the middle aged are now widely prevalent among the children and adolescents. A recent study, which explored the prevalence of overweight and obesity in 20243 Indian children in the age range of 2 to 17 years, found that 18.2% was obese as per the International Obesity Task Force Classification. But the percentage of obesity was found to be much higher, that is, 23.9% when World Health Organization criteria were applied. The prevalence of overweight and obesity was higher in boys than girls. The mean body mass scores for the age group of 5 to 17 years have increased tremendously as compared to the normative data of approximately 24 years ago (Khadilkar, Khadilkar, Cole, Chiplonkar, & Pandit, 2011). Overweight is associated with many psychosocial adversities but the relationship appears to be mediated by other factors among which binge eating seems to be very important (Telch & Agras, 1994; Stice, Presnell, & Spangler, 2002). It is generally reported that about 40% of overweight girls and 20% of overweight boys engage in at least one of the disordered eating behaviors (Decaluwe, Braet, & Fairburn, 2003; Neumark-Sztainer et al., 2007). In fact disordered eating is considered to be a risk factor for obesity, particularly among adolescent girls (Stice et al., 2002).

Though there is limited data, it is generally recognized that overweight is associated with lowered self-esteem and high rates depression and anxiety. The association between overweight and depression seems to be stronger among the adolescents (Needham & Crosnoe, 2005). It is understood that body mass shares a positive correlation with body dissatisfaction (Kostanski & Gullone, 1998; Taylor, Sullivan, & Kliewer, 2012), anxiety and depression (Kostanski & Gullone, 1998; Isnard et al., 2003) and an inverse relationship with self-esteem (Ackard, Neumark-Sztainer, Story, & Perry, 2003; Taylor et al., 2012). Studies focusing on the impact of perceived weight and

psychopathology in adolescents suggest that appearance overvaluation, body dissatisfaction and depressive symptoms are mediated by comorbid binge eating problem (Stice et al., 2002). A confirmatory factor analysis by Dunkley and Grilo (2007) supports that low self-esteem and depression show a strong relationship in patients with binge eating disorder but not in others. But there are some studies that indicate binge eating correlates with self-esteem but not with depression (Decaluwe et al., 2003).

In a recent study, Zeeck and colleagues (2010) compared 20 binge eaters, 23 obese patients and 20 normal weight controls with regard to everyday emotions and the relationship between emotions and eating pattern. They found that binge eaters show a more negative pattern in everyday emotions, with feelings of loneliness, disgust, exhaustion or shame leading the list. Araujo, da Silva Santos and Nardi (2010) conducted a systematic literature review to examine the relation between depression and binge eating disorder. They sourced 14 studies published from 1980 through 2006, which included one cohort, four cross-sectional and nine case-control studies. Most studies (7/14) were conducted in the United States and the majority of the studies (10/14) showed an association between depression and binge eating disorder.

This review suggests that over weight (or high body mass) shares a relationship with low self-esteem and depression but the relationship may vary with associated binge eating. Most of the studies in this direction are based on obese population and come from the West. There is no robust data in this area in India. As the prevalence of overweight and obesity is rising alarmingly in Indian population, particularly among the adolescents, understanding the impact of overweight on psychopathology will go a long way in developing appropriate intervention programmes. In this backdrop, the purpose of the study was to examine the role of binge eating in relationship between body mass and self-esteem and depression in overweight adolescents.

Method

Sample :

The study involved 78 school-going adolescents (39 overweight adolescents and 39 normal weight cohorts), aged 12-17 years, and studying in standard VIII to X. The students were recruited from local schools through purposive sampling method. Incidentally the sample had 40 boys and 38 girls. With reference to the grade, there were 28 adolescents each from grade VIII and IX; and 22 from grade X.

Procedure:

The participants were approached through community-based, private and public schools. After explaining the purpose of the study, informed consent was obtained from the school authorities, parents and the prospective participants. The data of height and weight of the participants were collected from the school records. Each participant was assessed individually with Binge Eating Scale (Gormally, 1982), Rosenberg Self Esteem Scale (Rosenberg, 1965) and Birleson Depression Self Rating Scale for Children (Birleson, 1981) in a convenient environment. Overweight was identified by calculating the Body Mass Index (BMI) by using the standard procedure i.e. weight-to-height ratio expressed as Kg/M2 (World Health Organization, 2000). Those with a BMI below 25 were categorized as normal weight and those with a BMI above 25 were categorized as overweight. But it was ensured that those with underweight and obesity were not included in the study. Statistical Analysis was carried out with Statistical Package for Social Sciences for Windows Version 20.0 (SPSS 20.0). Descriptive Statistics, Pearson's r, point-biserial correlation and linear regression analysis were applied as per their basic assumptions.

Results

Table 1. Binge eating scores of the normal weight and overweight adolescents (N=39)

BMI	Mean	SD	t (df=57)
Below 25 (Normal weight)	9.10	4.14	l4.18**
Above 25 (Overweight)	15.05	7.87	

**p <.01

Table 2. Correlation matrix for BMI, Binge eating, Self-esteem and depression.

Main Variables	Binge Eating	Self-Esteem	Depression
BMI[a]	0.43**	-0.12	0.06
Binge Eating	-	-0.50**	0.22*
Self- Esteem		-	-.13
Depression			-

** p < .01; p <.05

aBMI coding: 1= normal weight; 2= overweight; SPSS computes Pearson's r for point-biserial correlation.

Table 3. Partial correlation matrix for BMI, Self-esteem and depression when binge eating was controlled.

Control Variable	Main Variables	BMI	Self-Esteem	Depre-ssion
Binge Eating	BMI	-	.13	-.04
	Self-Esteem		-	-.02
	Depression			-

Table 4. Regression analysis for self-esteem as dependent variable

Independent variable	Unstandardized Coefficients		Standardized Coefficients	t	p
	B	Std. Error	Beta		
(Constant)	22.74	1.89		12.02	<.01
Gender	-0.79	0.86	-0.09	0.91	NS
BMI	1.09	0.95	0.13	1.14	NS
Binge Eating	-0.35	0.07	-0.56	5.06	<.01

Table 5. Regression analysis for depression as dependent variable

	Unstandardized Coefficients		Standardized Coefficients	t	p
	B	Std. Error	Beta		
(Constant)	18.75	1.63		11.54	<.01
Gender	0.36	0.74	0.06	0.48	NS
BMI	-0.30	0.82	-0.05	0.37	NS
Binge Eating	0.12	0.06	0.25	1.95	<.05

Table 1 indicates that overweight adolescents had higher binge eating scores than those with normal weight. Table 2 indicates that body mass and binge eating are significantly correlated. Body mass index did not have any significant correlation with self-esteem or depression. But binge eating showed a significant negative correlation with self-esteem; and a significant positive correlation with depression. Table 3 shows that body mass, self-esteem and depression did not show any significant correlation when binge eating scores were controlled. Table 4 indicates binge eating predicts self-esteem. Table 5 indicates binge eating predicts depression.

Discussion

Problems of obesity and overweight are on the rise in India, particularly among the adolescents (Khadilkar et al., 2011). Overweight is associated with several psychological problems albeit it is considerably influenced by binge eating problem. In this context the present study examined the relationship between body mass and self-esteem and depression in overweight adolescents; and the possible role of binge eating in the relationship. The present study indicates that obese adolescents will score high on binge eating than those with

normal weight. This finding is important in the backdrop where studies indicate that eating disorders is the key factor in weight-related body dissatisfaction and related psychopathology (Johnson & Wardle, 2005). Present study also indicates that binge eating shares a significantly negative correlation with self-esteem; and a significantly positive correlation with depression. This finding is supported by previous studies on obese population, which indicate that binge eating was related to high levels of anxiety and depression and low levels of self-esteem (Isnard et al., 2003). But when binge eating scores were controlled, the relationship between body mass, self esteem and depression became non-significant, which may imply that binge eating is an important mediating factor in manifested psychopathology (Yanovski, Nelson, Dubbert, & Spitzer, 1993; Telch & Agras, 1994; Stice et al., 2002). In tune with most of the earlier studies (Kostanski & Gullone, 1998; Isnard et al., 2003), this study indicates that binge eating predicts depression in overweight adolescents. It would be logical to infer that binge eating denotes a severe psychopathology. Similarly, binge eating was able to predict self-esteem i.e. higher the binge eating, lower would be self-esteem (Ackard et al., 2003). This phenomenon was well explained in previous studies that episodes of disinhibited eating pattern might lower a person's self-esteem, making the person more susceptible to disinhibited eating in the future, in a self-perpetuating spiral. Such a spiral may provide at least part of the mechanism that contributes to both binge eating (Polivy & Herman, 1985) and low self-esteem (Garner, et al., 1983). These findings support previous studies that there is a need to identify overweight adolescents who binge-eat as a subgroup so as to extend appropriate help in dealing with associated psychopathology (Isnard et al., 2003). Interestingly, gender vis-à-vis body mass and binge eating had no effect on psychopathology. This finding may imply that there is no need for gender-specific psychosocial intervention programmes while addressing psychopathology in overweight adolescents (Ackard et al., 2003).

The present study has several implications for intervention with adolescents. First, interventions for overweight adolescents should aim at developing healthy eating patterns, which in turn may prevent problems related to low self-esteem and depression. Gender may not be very important as far as weight-related psychopathology is considered. Rather, overweight adolescents should be routinely screened for binge eating so as to identify and manage serious psychopathology. Nevertheless, the study has specific limitations, which need to be considered before generalizing the findings. For instance, BMI, the measure of overweight was measured only once. For a robust understanding, a BMI of 19 should have been considered the cutoff for normal cohorts. Onset of binge eating and pre-morbid psychopathology was not considered. Binge eating was not clinically diagnosed. These issues may be addressed in future studies.

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Deepthi, A., Centre for Health Psychology, University of Hyderabad, Prof. C.R .Rao Road, Gachibowli, Hyderabad 500046

Praveen, K.K., Centre for Health Psychology, University of Hyderabad, Prof. C.R .Rao Road, Gachibowli, Hyderabad 500046

Chandrashekhar-Rao, P., Centre for Health Psychology, University of Hyderabad, Prof. C.R .Rao Road, Gachibowli, Hyderabad 500046

Vincent, K., Centre for Health Psychology, University of Hyderabad, Prof. C.R .Rao Road, Gachibowli, Hyderabad 500046

M.T. Kishore, PhD, Reader, Centre for Health Psychology, University of Hyderabad, Prof. C.R .Rao Road, Gachibowli, Hyderabad 500046. Email : mtk_psy@rediffmail.com;