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Examining the suitability of hypertension self-management model in explaining the causes of hypertension in Punjab, Pakistan

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Abstract

Hypertension has been increasing very rapidly and is a major cause of deaths in adult population. It is a great challenge for policy makers and health personals to address that deadly problem. The primary cause of hypertension is genetic as well as life styles of the people. The sedentary life style has been regarded a major cause of secondary hypertension. The study is planned to identify the significance of different construct of hypertension self-management behavior (HSMB). Cross-sectional survey has been conducted in three district Faisalabad, Multan and Lahore for collecting data on hypertension from 600 males of age 30-65 years. Descriptive analysis identified the suitability of hypertension self-management behavior. The analysis clearly identified the importance of self-integration, self-regulation, interaction with experts and adherence to recommend regimen the different constructs of HSMB in explaining the hypertension. It is suggested of healthy eating life styles, regular exercise, regular checkup, avoiding extra salt and junk food, conscious about high and low blood pressures. Understanding the symptoms of the high and low blood pressure and the adherence to the doctor advise for regular checkup of the blood pressure.

Key words: *Hypertension, self-management behavior, descriptive analysis, Punjab and suitability.*

Introduction:

Pakistan is country of 230 million populations, there is repaid migration from rural areas to urban areas and that repaid migration causing mechanization, dietary changes, elderly population and sedentary life style and that condition leads to number of chronic diseases. In Pakistan, according to the National Health Survey (2020), hypertension affects 18% of adults overall and 33% of adults over 45 years old. Every third person over the age of 40 is at risk of high blood pressure. 50% of the people in Pakistan with hypertension are diagnosed and only half of them are ever treated. The high blood pressure has a serious health complication that increases the national expensive on health and the individual family life. These health situations

call for scientific investigation for identification of the correlates of high blood pressure in Punjab, Pakistan.

The rising death rate and prevalence of morbidity due to hypertension necessitates the identification of risk factors, which is a prerequisite for formulating national health policy to address rising death rates from hypertension. This study will aid in the generation of information on hypertension and its related risk factors in three Pakistani cities. In addition, the respondents' awareness and knowledge of hypertension control will be assessed as part of the study.

The concept of hypertension links to excessive blood pressure. One may argue that blood arteries from the heart carries blood to all parts of human body. The heart push blood into the arteries or vessels with its beats. Hypertension is caused by the pressure of blood on arteries wall when blood pressure is pump by heart (WHO, 2013). The number of definitions of high blood pressure or hypertension are available in literature review but the recommended definition is WHO accepted globally and it is used by most of the researchers from developing and developed world (WHO, 2005). If the systolic blood pressure is ranging from 120 to 129 and diastolic blood pressure from 80 to 84 that is known as normal blood pressure. There are boarder line categories of high normal blood pressure. The person will be categorized as a person of high normal or boarder line, if the systolic blood pressure ranges 130 to 139 and diastolic blood pressure from 85 to 89.

Objective:

the main objective of the study to examine the suitability of the different constructs such as self-integration, self-regulation, interaction with experts and adherence to recommend regimen in understanding the causes of hypertension.

Hypertension Self-Management Behaviour Model:

Social Cognitive Theory claimed that personal elements (such as cognitive, emotional, biological, and other personal characteristics) as well as environmental factors affect human behaviours, particularly health behaviours (Bandura, 1997). This theory holds that cognitive elements and other personal characteristics control human behaviour, whereas external influences may help or hinder a person in engaging in a certain behaviour.

Cognitive, emotional, biological, and other personal elements are referred to as personal variables in SCT. The term cognition describes what individuals believe and think (Bandura, 1989). The performance of actions can be enhanced or diminished depending on the person's beliefs, which might impact cognitive patterns. Affective states can also alter a person's behaviour, according to SCT. What individuals experience is referred to as affection.

According to Bandura, a person's feelings may influence their mental processes, which in turn can either improve or worsen how well they accomplish actions (Bandura, 1989). The biological characteristics are included in the personal element. Bandura claimed that biological qualities may influence human behaviour and place limitations on human capacities. Biological variables include gender, ethnicity, temperament, and genetic predisposition (Bandura 1989). Physical states are another aspect of the individual in SCT. It alludes to one's physical prowess and state of health. Human behaviour is influenced by physical states (Bandura, 1997).

Environmental variables might encourage or discourage people from engaging in particular activities (Bandura, 1989). All things that are physically external to a person or one's cognitive or mental representation of an environment are referred to as environments (e.g. provision of social support).

SCT has been used as a framework in earlier studies to examine human and health behaviours. SCT has also been utilized in a number of research to examine variables that are connected to and have an impact on health behaviours in the context of hypertension (Yang et al., 2013 and Lee et al., 2010). The idea of hypertension self-management behaviour is based on the social cognitive theory.

Hypertension self-management behaviour model is primarily based upon personal realization about the health conditions and the actions, strategies and measures taken to address that health conditions. In present study health condition is hypertension and the actions may be eating healthy foods, exercising, minimizing extra sodium, regular monitoring and check up of the blood pressure in the light of the doctor advice, following advice of the dietitians, engagement in such activities those minimize depression, stress and anxiety etc. HSMB based upon six constructs namely self-integration, self-regulation, interaction with experts and professionals, attaining social support, self-monitoring and adherence to treatment regimen. These constructs or dimensions are likely to affect hypertension and based upon number of the questions/actions to regulate blood pressure. The detailed descriptions of these statements/actions are given in the chapter of methodology.

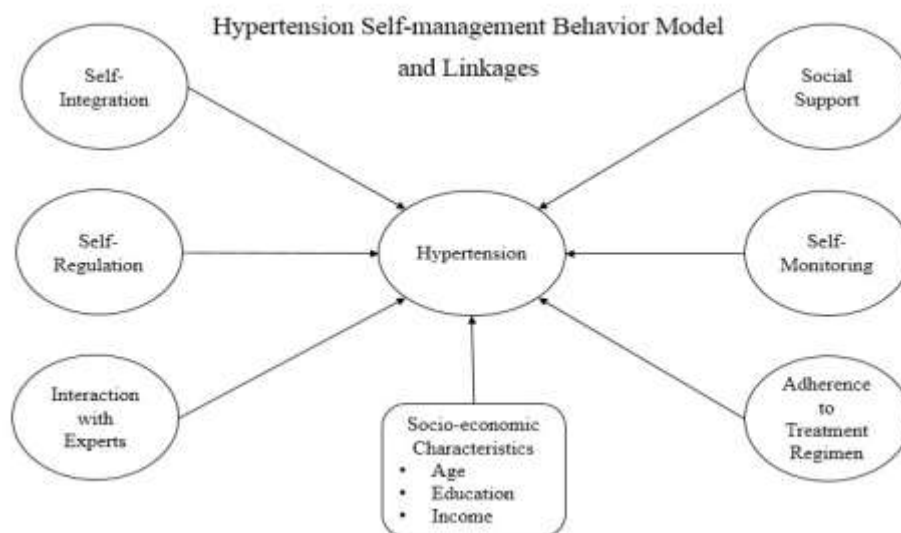


Fig: Hypertension self-management behavior model and linkages

Methodology:

A cross section survey is carried out in three randomly selected districts namely Faisalabad, Lahore and Multan of Punjab Pakistan. These three districts are major districts of the province Punjab regarding size of population. Lahore is the highly populated district of Punjab with population of metro area 13.4 million and categorized as the first district regarding of population and Faisalabad is the second district of Punjab with respect to population size of metro area 3.5 million. Multan is also highly populated district with the metro population of 2.16 million (GOP, 2018). These are the districts where high prevalence of the hypertension is expected because of the densely

population, sedentary life style and unhealthy eating habits. A random sample of 600 males was selected to diagnoses the extent and nature of hypertension of age 30 to 65 and a sample of 200 respondents are randomly selected from each district. Descriptive analysis such as frequency distribution, percentage, Mean and standard deviation of the different dimensions of different constructs of HSMB.

Result and discussions:

Hypertension Self-Management Behaviour

Self-management behaviour is very important in every aspect of life to address the different situations or conditions for example it maybe disease, it maybe performance, it maybe studies and it maybe business activities etc. Self-realization to perform certain actions or behaviours are very helpful in achieving the targets. The people with rational management behaviour likely to address or settle situations or conditions very effectively and efficiently. While on the other hand, the people who had irrational management behaviour they cannot achieve the required targets and goals. Organized and disciplined efforts are always fruitful and useful in achieving targets and goals, while unorganized, in disciplined efforts cannot be effective in achieving desired goals. In this section the different aspects/dimensions of hypertension self management behaviour have been examined, hypertension such as self-management behaviour consisting on the constructs or dimensions self-integration, self-regulation, interaction with health personals, self-management behaviours (social support) self-monitoring and adherence to recommended regimen.

Self-integration:

The self-integration covers aspects eating of healthy food and its quantity doing exercise, thinking about hypertension, visiting doctors, watching TV, interaction with friends and how to manage the hypertension. It was asked from the respondents whether they prefer to eat grains, fruits, beans and vegetables to avoid hypertension 40 percent of the respondents disagreed with this viewpoint while 47.5 percent of the respondents were agreed with this viewpoint that they prefer to eat healthy food like grains, fruits and vegetables to maintain blood pressure. The significance of healthy food has been also acknowledging in a number of studies. The studies pointed out grains, fruits, beans and vegetables which all have essential nutrients and minerals are very useful to maintain human health, (Mean, 2.63 Standard deviation, 1.385).

It was also asked from the respondents whether they do not like to eat too much food which is highly saturated fat (coconut oil, cheese, mutton fat, cotton seeds). **Table 1** indicates that 38.3 % of the respondents were disagreeing with this view they explained that oily food, is very tasty food it is quite difficult to make the food tasty without oil. In Pakistan majority families used enough quantity of oil in cooking. 50.8 percent of the respondents were agreed with this viewpoint that they do not like to eat too much oily food which is highly saturated fat, (Mean, 3.07 Standard deviation, 1.444). In the near past the people like to use too much fat in their cooking but now they are changing their attitude towards less fatty saturated food because social media played an important role in providing information about the healthy food and healthy eating. Regarding the views of the respondents about when they make choice of food whether they always keep blood pressure in mind. 39.1 percent of the respondents were disagreed with

this view point. On the other hand, 55.6 percent viewed that they keep in mind the condition of their blood pressure while eating, (Mean, 3.21 Standard deviation, 1.468).

The quality and quantity of food have been identified as a predictor of hypertension, poor quality and large quantity do affect negatively blood pressure, while quality food and appropriate in quantity help in maintaining blood pressure. 45 percent of the respondents disagreed with the view that they like to reduce the quantity of food to address their blood pressure, while the same percentage of the respondents were agreed with this viewpoint that they like to reduce amount of food keeping in mind the blood pressure. No doubt eating salt in extra amount is very dangerous for hypertensive patients particularly and generally for all peoples. Different studies conducted in developing and developed countries provided empirical evidences of salt's dangerous effect on people particular on the people who are at the risk of hypertension. (Costa, 2007) 34.1 % of the respondents were disagreed that they prefer to eat less salty food explaining that less salty food has no taste and it's difficult to make food tasty without salt. In contrast to that attitude 58.3 percent of the respondents agreed with this view that they prefer to eat less salty food. In the recent past in Pakistan majority people like to eat salty food, but now that attitude is changing keeping in view its adverse effect on hypertension, (Mean, 3.22 Standard deviation, 1.467).

Table 1:- Descriptive analysis of self-integration of hypertension self-management behavior model. n= 600

Hypertension Self- Management Behaviour	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Std. Dev
I prefer to eat portion foods products rather filling full belly.	12.5	15	12.5	37.5	22.5	3.43	1.322
I prefer to eat grains fruits, beans and vegetables to avoid hypertension.	31.7	18.3	12.5	30.0	7.5	2.63	1.385
I don't like to eat too much food which is highly saturated fat (coconut oil, cheese, mutton fat, cotton seeds)	22.5	15.8	10.8	33.5	17.3	3.07	1.444
When I make choice of food I always keep blood pressure in mind.	18.3	20.8	5.2	32.3	23.3	3.21	1.468
I like to reduce the amount of food to address my blood pressure	15.8	29.2	9.2	34.2	11.7	2.97	1.317
I prefer to eat less salty food.	18.3	15.8	7.5	32.5	25.8	3.32	1.467
I do exercise (about 30 to 60 minutes per day, such as (jogging, walking, running, cycling and running)	22.5	10.8	8.7	33.5	24.5	3.27	1.502

I always thought that my hypertension is not serious health issue.	20.8	15.8	5.8	32.5	25.0	3.25	1.503
I perform my duties comfortably without taking stress of the hypertension (visiting doctor hospital or work place)	19.2	17.5	9.2	26.7	27.5	3.26	1.498
I do try to control stress by watching TV, listening music.	22.5	15.8	5.8	29.2	26.7	3.22	1.541
I like to talk to my family and friends.	18.3	17.5	9.0	26.7	28.5	3.30	1.494
I don't like to use extra salt to make my food tasty, to avoid hypertension.	17.5	18.3	4.5	28.0	31.7	3.38	1.513
I have knowledge how to maintain blood pressure.	20.8	18.3	12.5	27.5	20.8	3.09	1.456

Doing exercise has always regarded beneficial to human health. Doing exercise for 30 to 60 minutes per day is very effective to maintain human health. Descriptive analysis indicates that 33.3 percent of the respondents were disagreed with this view that they do exercise about 30 to 60 minutes per day. They viewed that life is too busy and difficult to spare time for different activates of exercise like jogging, walking, running and cycling, (Mean, 3,27 Standard deviation, 1.502). On the other hand, 58 % of the respondents had the realization of the benefits of doing exercise on human health. They were agreed with the view that they do exercise daily to keep them healthy, active and fresh. Regarding the respondent's views about the idea whether they perform their duties comfortably without taking stress of hypertension. Analysis indicates that 36.7 percent of the respondents disagreed with this view point while 54.2 percent of the respondents agreed with this view that they perform the duties without taking stress of hypertension while performing their duties. Thinking about blood pressure causes stress, tension and depression which is dangerous to human health. Depression and tension leads to high blood pressure. It was asked from the respondents whether they always thought that their hypertension is not serious health issue. 36.6 percent of the respondents did not agree with this view point while on the other hand 57.5 percent of the respondents were agreed with this view that they always keep in mind hypertension is not serious health issue because it is curable.

Watching T.V and listening music are the components of the lifestyle. Healthy life style leads to good health while unhealthy lifestyle resulted in poor and bad health. It was asked from the respondents whether they try to control stress by watching TV and listening music. Analysis (table 1) indicates that 38.3 percent of the respondents were disagreed with this viewpoint while 55.9 percent of the respondents agreed with this view point explaining that watching TV or listening music primarily divert the intension from hypertension, which is very helpful and useful

to control stress and depression. The respondent's views were also explored about the idea whether they prefer to eat portion food products rather filling full belly.

Descriptive analysis 37.5 percent of the respondents were disagreed with this viewpoint, while 60 percent of the respondents agreed with this viewpoint. Explaining that at the time of eating if a person keeps their hands away from eating while he or she has some desire to eat more or feeling some hungry it is good for health. But in practices in Pakistan majority people eat too much and fill their belly without thinking health implications of heavy eating. As far the views of the respondents about the idea that they have knowledge how to maintain blood pressure. 39.1 percent of the respondents were disagreed with this view point explaining that they have no idea how to maintain blood pressure. This maybe likely the views of those peoples who did not experience hypertension, while on the other hand, 48.3 percent of the respondents viewed that they have the knowledge and information how to maintain their blood pressure, (Mean, 3.09 Standard deviation, 1.456).

The self-regulation:

The self-regulation (knowledge) is second component of hypertension, self-management behaviour. The self-regulation (knowledge) covers aspects related to knowledge about the symptoms and signs of high blood pressure, knowledge how to maintain the symptoms and signs of high blood pressure, Knowledge about symptoms and signs of low blood pressure and determination to control hypertension.

Table 2:- Descriptive analysis of self-regulation of hypertension self-management behavior model. n= 600

Self-regulation (knowledge)	S.D	D	N	A	SA	Mean	Std. Dev
I knows the symptoms and signs of high blood pressure	21.7	20.0	5.8	32.5	20.0	3.09	1.479
I do manage to maintain the symptoms and signs of high Blood Pressure properly	22.5	15.8	15	26.7	20.0	3.06	1.458
I have the knowledge symptoms and signs of low BP.	18.3	18.3	12.5	27.5	23.3	3.19	1.446
I can do manage the symptoms and signs of my low BP properly	15.8	18.3	10.8	31.7	23.3	3.28	1.411
I have makeup the mind to control my BP if I feel.	20.8	31.7	9.2	18.3	20	2.85	1.454
I normally compare my current BP level with desired BP level.	12.5	17.5	15	32	23	3.35	1.339

It has been asked from the respondents what are your views about the idea that they know the symptoms and signs of high blood pressure. Analysis indicates that 41.7% of the respondents did not know properly the symptoms and signs of high blood pressure. 52.5% of the respondents had the knowledge about the symptoms and signs of high blood pressure, (Mean, 3.09 Standard deviation, 1.479). Studies have indicated that people are careless about the

condition of their high blood pressure, they do not have regular check up on their that conditions that's why a huge number of causalities happened due to the high blood pressures because high blood pressure is silent killer. It has been also asked from the respondents whether they know the ways to manage the symptoms and signs of high blood pressure properly. 38.3% of the respondents disagreed with this idea indicating their carelessness about the health conditions of their blood pressure, contrast to that 46.7% of the respondents agreed with this view point and explained that they do manage to maintain the symptoms and signs of high blood pressure. It is surprising to note that 15% of the respondents have not given answer is Yes or No reflecting their carelessness about health condition, (Mean, 3.35 Standard deviation, 1.339).

High and low blood pressure both are serious health conditions and life threatening. It is general perception in the society that low blood pressure is not very serious situation than high blood pressure and people with low blood pressure generally become carelessness about their low blood pressure. It has been asked from the respondents whether you have a knowledge about the symptoms and sign of low blood pressure. Descriptive analysis (table 2) indicates that 36.6% of the respondents did not know about the symptoms and signs of low blood pressure while on the other hand 50.8 % of the respondents had given answer in Yes reflecting that they know the symptoms and sign of low blood pressure. It is astonishing to note that a considerable percentage of the respondents have not given in Yes or No, reflecting their carelessness about the implications of low blood pressure. Respondents views on the thoughts whether they can do manage the symptoms and sign of their low blood pressure properly. Analysis indicates that 34.1% of the respondents did not agree with this statement while 55% of the respondents agreed with the statement explaining that although they don't have the condition of low blood pressure but they have the knowledge how to address low blood pressure. A substantial number of the respondents were neutral on the issue indicating that they have no interest to know how to manage the low blood pressure.

Regarding the view whether they have make up the mind to control their blood pressure if they feel. 52.5% of the respondents replied that they did not think about to address the high blood pressure in contrast to that views 38.3 % of the respondents have given in answer Yes and replied that when they feel blood pressure they do manage to control that condition of blood pressure, (Mean, 2.85 Standard deviation, 1.454). As far the views whether they normally compare their current blood pressure, level with desired blood pressure level. Analysis reflects that 30 % of the respondents have given in answer No and replied that they never ever tried to compare their blood pressure with their desired blood pressure. On the other hand, 55% of the respondents replied in Yes indicating that they examined their current blood pressure situation with the desired level of blood pressure situation. It can be said that the mostly respondents are carelessness and not bothering about their health condition, (Mean, 3.35 Standard deviation, 1.339).

Interaction with health professionals or experts:

The third element of hypertension self-management behavior is interaction with health professionals or experts. It is generally perceived that the people who are serious with their health conditions it may be blood pressure, may be obesity or may be diabetes. They like to discuss these health conditions with the experts while the people who are not serious about their health conditions, they are reluctant and hesitant to discuss their health conditions with health

professionals. Such people are really at risk of high blood pressure. Regarding the views whether they prefer to discuss the treatment plan with their doctor if required. 48.4% respondents had given answer in NO and explained that they don't like to interact with the health professionals. On the other hand, 42.5% of the respondents had given answer in YES and replied that they like to discuss the treatment plan with their doctor and further viewed that it is really good strategy to discuss the treatment plan with doctors how to manage the blood pressure, (Mean, 2.82 Standard deviation, 1.353). It has been also explored from the respondents whether they don't understand the things which can affect their health. Analysis also indicates that 44.2 % of the respondents was disagreed with this view point reflecting that they have no understanding about the things which can affect their health condition and they don't like to discuss with their doctor. Analysis indicates that 48.3 % of the respondents replied that they normally discuss the conditions of their health with the doctors when they could not understand why their health is affecting, (Mean, 2.92 Standard deviation, 1.365).

Table 3:-Descriptive analysis of health professionals of hypertension self-management behavior model. n= 600

Interaction with health professionals	S.D	D	N	A	SA	Mean	Std. Dev
I prefer to discuss the treatment plan with my doctor if required.	21.7	26.7	9.2	32.5	10	2.82	1.353
When I do not understand the things that can affect my health I prefer to discuss with my doctors.	17.5	26.7	7.5	27.5	20.8	3.07	1.444
I prefer to discuss the causes of high blood pressure with my doctor	18.3	27.5	5.8	32.5	15.8	3	1.404
I prefer to discuss the causes of low blood pressure with my doctor	17.5	29.2	9.2	27.5	16.7	2.97	1.391
I prefer to discuss with my doctor to learn more about the hypertension	15.8	31.7	15.8	18.3	18.3	2.92	1.365

Knowing the causes of low and high blood pressure is very important to making the mind and prepare strategy to maintain the blood pressure. The people who are well equipped with the knowledge of causes of low and high blood pressure they can take proper decisions to manage their blood pressure conditions. On the other hand, the people who do not have the knowledge of causes of high and low blood pressure and such people are at great risk of health problem. It is explored from the respondents whether they prefer to discuss the causes of high or low blood pressure with the doctor, around 45% of respondents had given in answer No and replied that they didn't bother about to discuss their blood pressure conditions with the doctor. Slightly higher than 44% of the respondents agreed with this view point explaining that they like and prefer to discuss with the doctors about the causes of high and low blood pressure. This rational attitude is very beneficial to address the respondents' health problems including blood pressure. Interest in acquiring knowledge is a vital step in learnings process which lead to rational approach for learnings. The people who are serious in learnings they explore a number of the

sources for learnings. Respondents' views are explored on the issue whether they prefer to discuss with their doctors to learn more about hypertension. 47.5% of the respondents had given answer in No indicating that they don't like to discuss with health professionals and experts about causes of high blood pressure and low blood pressure. On the other hand, 36.6% of the respondents have given answer in Yes, reflecting their seriousness and interest about the learnings of condition of blood pressure. It also surprising to note that 15.8% of the respondents have no interest to learn from the doctors about health complication of the high blood pressure, (Mean, 2.92 Standard deviation, 1.365).

Social support:

The fourth element of hypertension self-management behaviour links to social support and those dimensions cover aspects discussion with neighbours, friends and patients about the strategies to control blood pressure. It has been asked from the respondents on the issue whether they like to discuss with their neighbours, friends and patients about the controlling strategy of blood pressure. Descriptive analysis indicates that 45 % of the respondents have given answer in No, explaining that they don't like to discuss their health conditions of blood pressure with their friends, neighbours and patients how to control blood pressure. They further explained that discussing health conditions with the social group can be very dangerous for them and for their family because people exploit their health conditions and damage their reputation. On the other hand, same number of the respondents i.e. 45% agreed with this view point and replied that they prefer to discuss their health condition with their social groups like friends, neighbours and patients, (Mean, 2.91 Standard deviation, 1.311). It also asked from the respondents whether they like to discuss with their neighbour's friends and other patients about the controlling strategy regarding their blood pressure. Analysis reveals that 39.1% of the respondents has given their answer in No that don't like to share their health conditions with their social group like friends, neighbours and other patients. Regarding the issue whether they do discuss with their social group, what are the strategies to manage blood pressure. 39.1 % of the respondents did not agree with this view point while on the other hand 52.5 % of the respondents had given answer in YES and replied that they discuss with their social groups about the techniques and strategies to maintain their condition of high blood pressure, (Mean, 3.26 Standard deviation, 1.295).

Table 4:- Descriptive analysis of self-management behaviour of hypertension self management behaviour model. n= 600

Self-Management behaviour regarding hypertension (Social support)	S.D	D	N	A	SA	Mean	Std. Dav
I like to discuss with my neighbour, friends and other patients regarding my B.P	18.3	26.7	10	35.8	9.2	2.91	1.311
I like to discuss with neighbours' friends and other patients about the controlling strategy of blood pressure	10.8	28.3	10.8	27.5	22.5	3.22	1.358

I do discuss with neighbours' friends and other patients what the strategies and techniques used by them to control blood pressure	12.5	19.2	15.8	35	17.5	3.26	1.295
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Self-monitoring:

The fifth element of the hypertension self-management behaviour is self-monitoring. Self-monitoring covers aspects visiting doctors, regular check-up when feel the symptoms of the high and low blood pressure. It has been asked from the respondents when they feel symptoms and sign of high blood pressure whether they visit their doctors. The descriptive analysis demonstrates that 47.55 of the respondents did not agree with this view point reflecting their carelessness about serious health problems while on the other hand 42.5% of the respondents agreed with this view point and replied that they visit their doctor when they have feelings about the blood pressure, (Mean, 3.88 Standard deviation, 1.383). It has also asked from the respondents when they feel sick whether they visit their doctor for blood pressure checkup. Analysis indicates that 49.5% of the respondents did not agreed with this view point and explaining that if you are taking the things so seriously in any illness or thinking about blood pressure, such way of thinking causes stress and tension which is even more dangerous for the patients who are at risk of blood pressure, on the other hand 47% of the respondents were agreed with this view explaining that blood pressure should not be remained unchecked. It is wise and an appropriate action to visit doctor for blood pressure check-up when they feel some sickness. It is further asked from the respondents that when they feel symptoms or signs of low blood pressure whether they visit a doctor. 41% of the respondents was disagreed with this view point explaining that low blood pressure is not serious over high blood pressure Thinking that low blood pressure causes health problems leads to depression. Every time thinking about pressure also a cause of stress and anxiety, and this should be avoided. On the other hand, 50.8% of the respondents agreed with this view point replying that symptoms of low and high blood pressure can cause to serious health implications, (Mean, 3.09 Standard deviation, 1.439) and it should be taken seriously and need to visit the doctor for checkup and consultation. In relation to aspect of self-monitoring. It was also asked whether they regularly check their blood pressure personally in order to maintain their high blood pressure. 33.3 % of the respondents disagreed with this view point explaining that always thinking about blood pressure is even not good for health. On the other hand, majority of the respondents (54.4%) were agreed with this view point that regular check up of blood pressure is essentially important to maintain good health and high blood pressure. Carelessness towards blood pressure can be dangerous and life threatening, (Mean, 3.43 Standard deviation, 1.499).

Table 5:- Descriptive analysis of self-monitoring of hypertension self-management behaviour model. n= 600

self-monitoring	S.D	D	N	A	SA	Mean	Std. Dav
When I do feel the symptoms and signs of high blood pressure I visit my doctor	20.8	26.7	10	29.2	13.3	3.88	1.383
When I feel sick I do visit my doctor for blood pressure check up	22.6	26.7	5.8	26.7	18.3	2.92	1.471
When I feel symptoms or signs of low blood pressure I do visit my doctor	26.8	13.3	10.0	32.5	18.3	3.09	1.439
I regularly check my blood pressure personally as to manage my high blood pressure	15	18.3	12.5	17.5	36.7	3.43	1.499

Adherence to recommended regimen:

The next element of hypertension management behaviour is adherence to recommended regimen. This element covers aspects like taking medicines at the right time, taking right dose and taking medicine at the right time and visiting doctor regularly and following advice of the doctor in letter and spirit. It has been asked from the respondents whether they take medicine of high blood pressure 33.3% disagreed with the view point of taking medicine. Some of the respondents viewed that they have no symptoms of the blood pressure. In contrast to that 55.8% of the respondents agreed that medicine should be taken to maintain blood pressure. Explaining that carelessness in taking medicine can be dangerous to the human health, (Mean, 3.26 Standard deviation, 1.423). In this group of people there are number of the respondents who have not symptoms of blood pressure but agreed with this view point of taking medicine for better health even to avoid multi-dimensional complications. It has also been asked from the respondents whether they are careful in taking right dose of medicine to maintain blood pressure as suggested by their doctors. Table 6 indicates 47.5% of the respondents disagreed with this view point indicating that extra carefulness is also dangerous for human health. In contrast to that 47.4 % of the respondents agreed with this view point that right dose of medicine recommended by doctor should be taken without any thinking. Right dose is essentially important to maintain the condition of high blood pressure, (Mean, 2.97 Standard deviation, 1.44).

Table 6:- Descriptive analysis of adherence to recommended regimen of hypertension self-management behaviour model. n= 600

Adherence to recommended regimen	S.D	D	N	A	SA	Mean	Std. Dav
I do take my medicines of high blood pressure	18.3	15	10.8	34.3	21.5	3.26	1.423

I am very careful in taking right dose of my medicines of blood pressure as suggested by my doctors	20.8	26.7	4.2	31.7	16.7	2.97	1.444
I take my hypertensive medicines at the right time as suggested by my doctor	28.3	15	15	27.7	24.0	3.24	1.437
I regularly visit my doctor for my blood pressure check up	26.7	12.5	18.3	29.2	13.3	2.90	1.418
I follow the advice of my doctors to manage my blood pressure	21	14.8	5.8	26.7	31.0	3.33	1.554

Timing of taking medicine is regarded as important factor to address the human health. Irregularity in timing of taking medicines can cause serious health problems because timing of taking medicine links with the physiology of human beings. It was asked from the respondents whether they take medicines at the right time as suggested by doctors. Descriptive analysis indicates that 43.8% of the respondents disagreed with this view point explaining that although timing is very important but it should not be taken so seriously even there are people if they skip medicine at given prescribed time they feel uncomfortable and uneasy and that state of situation even causes more problems. On the other hand, majority of the respondents (51.7%) of the agreed with this view that medicine should be taken at the right time as suggested by the doctors. Taking medicine irregularly likely to be dangerous for human health. Carelessness for the people who are at risk of blood pressure can cause serious health implications. It also asked from the respondents whether they visit their doctor regularly for blood pressure checkup. Analysis indicates that 39.2% of the respondents was disagreed with this view and stated that we have already explained that thinking too seriously about the blood pressure causes serious implication. No doubt checkup is very important but checkup in stressful condition is even more dangerous in contrast to that 42.5% (table 6) of the respondents were agreed with this view that regular visit of the doctor for blood pressure checkup is extremely important, (Mean, 2.90 Standard deviation, 1.418). Carelessness in regular monitoring can cause serious problem so there should be no compromise of regular check up by the doctor and such attitude is beneficial for maintaining human health along with other specific health conditions like blood pressure.

Doctors' advice is of key significance to maintain the health or to maintain blood pressure and it should be followed without any reservation. It has been asked from the respondents whether they follow the advice of their doctor to manage their blood pressure. 35.8% of the respondents was disagreed with this view point explaining that no doubt doctor advice is very important but personal analysis of own health condition are even more important. Person can properly analyze their own health condition more accurately and precisely rather than following advice of doctor. It is common perception in society that doctors make blood pressure cases more complicated even which are not curable. In contrast to that 57.7% of the respondents agreed with the statement that follow of advice of the doctor to manage blood pressure is very important without any doubt. People who follow the doctor's advice their health issues are more less than the people who do not follow doctor advice to regulate their blood pressure, (Mean, 3.33 Standard deviation, 1.554).

In sum it can be said that self-integration, self-regulation (knowledge) interaction with health, professionals and experts, social support, self-minoring and adherence to recommended regimen are very important components of hypertension and management behaviour. If a persons keep in their mind such elements of hypertension management behaviour it is more likely they can address their health issues including blood pressure properly. Avoidance of these elements of hypertension management behaviour can cause serious health implications.

Conclusion:

High blood pressure is a major cause of morbidities and mortalities. The prevalence of high blood pressure is about 40% and this high prevalence of hypertension causes serious multiple health implications like kidney disease, diabetes, cholesterol, stroke, and coronary heart disease. Knowledge and symptoms of high and low blood pressure contributes to increasing hypertension and poor knowledge of what to do in this situation of low and high blood pressure causes life threatening implications. The socio-economic factors which are also supported by other studies emerged an important correlate of the hypertension. There are substantial number of studies, those identified the significance of education in affecting hypertension (Howard et al., 2018; Choi et al., 2017; Park et al., 2016; Baek et al., 2015). Among the socio-economic indicators income as identified in the study significantly helps in reducing blood pressure (Liew et al., 2019; Choi et al., 2017; Baek et al., 2015; Lee et al., 2010, Gee et al., 2012; Matthews et al., 2002). The modern life styles resulting from the excessive use of social media also has been seen as an important factor for changing traditional way of living to so called modern way of living. The life style as it is supported by other studies primarily responsible of high incidence of hypertension (Castro et al., 2008). Excessive sodium intake (Ferreira and Aydos, 2010), smoking (Costa et al., 2007), sedentary lifestyle (Oliveira-Martins et al. (2011), overweight/obesity (Ulbrich et al., 2011), exercise (Mariana and Pereira, 2014) are the components of the lifestyle significantly related to the increasing prevalence of hypertension. Heredity and genetic factors (Salgado et al., 2003) contribute to higher prevalence to hypertension which is also supported by other studies. Unhealthy eating styles like eating of red meat, junk food, beverages and fats have been seen as predictors of high blood pressure or hypertension. Oliveira-Martins et al., (2011) identified 54.8% of age 40 - 55 years old diagnosed with high blood pressure. Among the other factors the unhealthy eating contributed towards high prevalence of hypertension as also emerged in the study. The role of social network and social relations have been identified in predicting increasing prevalence of hypertension. Social gatherings and social support are the contributing factors in minimizing depression, stress and anxiety. These factors severity damage the cognitive and psychological health which have been regarded as a major cause of increasing hypertension and other health implications like cardiovascular disease, stroke, diabetes, kidney disease etc. The empirical support has been also provided by Trivedi et al. (2008), Weinert, (2003) and Weiss (1974).

Health belief model has been emerged and effective and useful model for the investigation of health behaviour like hypertension. The different constructs of health belief models such as perceived severity, perceived susceptibility, perceived barriers, cues to action and perceived self-efficacy have been emerged an important factor in explaining the hypertensions. Recognizing of the emotional and psychological, physical feeling thoughts and achieves, helps to develop the

positive or constructive thoughts required for to address the depressing, anxiety and stress which is leading cause of hypertension.

The suitability of hypertension self-management behavior model has been established in predicting hypertension. Self-integration in terms of eating healthy food, interaction with friends and relatives, watching T.V, visiting doctors. has been identified as important construct of HSMB in explaining hypertension. Self-regulation not having knowledge about symptoms and signs of high and low blood pressure contributes towards high prevalence of hypertension. Interaction of patients with health experts or professionals helps patients to regulate their hypertension. Self-monitoring, self- realization and self-assessment about visiting doctors, regular checkup, consulting the dietitians do help the patient to monitor their blood pressure. Adherence to recommended regimens in terms of taking medicines at the right time and right dose as suggested by doctor have been seen contributing towards maintaining pressure. Self-realization, self-assessment and self-monitoring about the health conditions enable the patients to maintain and regulate their blood pressure.

Recommendations:

This shows there are other issues at play that need to be looked into and appropriate action done to address them, even if hypertension control is likely dependent on the accessibility and cost of medicine. Urban populations continue to see a rapid inflow of restaurants and fast food outlets, the majority of which provide dishes severely laden with salt and fat, despite the fact that rural Pakistanis rarely purchase ready-made and processed foods. Processed canned goods with a high salt content and are easier to find. In order to address the problem of hidden salts and fats in processed foods and identify how they may be properly regulated, it is crucial for the health sector to work closely with the food sector. It is suggested of healthy eating life styles, regular exercise, regular checkup, avoiding extra salt and junk food, conscious about high and low blood pressures. Understanding the symptoms of the high and low blood pressure and the adherence to the doctor advise for regular checkup of the blood pressure.

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