INTRODUCTION:

Hypertension, elevated blood pressure, is a noteworthy public health concern worldwide due to its significant contribution to the global health burden and its role as a prominent risk factor for the development of a number of disease processes. In the year 2001, high blood pressure accounted for 54% of stroke, 47% of ischemic heart disease, 75% of hypertensive disease, and 25% of other cardiovascular disease worldwide (Lawes, Hoorn, & Rodgers, 2008). The negative impact of hypertension on health status is clear, especially taking into account the disability, decreased quality of life, and mortality associated with stroke and cardiovascular disease. In 2001, 7.6 million deaths (13.5% of all deaths) and 92 million disability life-years (6% of total) were attributable to systolic blood pressure greater than 115 mmHg. It is saddening to note that such pervasive negative effects are related to such a modifiable cause.

Definition:

According to the seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure JNC 7th report (2004) defined and classified hypertension in adults, as shown in Table 1. The diagnosis of hypertension is made when the average of 2 or more diastolic BP measurements on at least 2 subsequent visits is ≥90 mm Hg or when the average of multiple systolic BP readings on 2 or more subsequent visits is consistently ≥140 mm Hg. Isolated systolic hypertension is defined as systolic BP ≥140 mm Hg and diastolic BP <90 mm Hg. Individuals with high normal BP tend to maintain pressures that are above average for the general population and are at greater risk for development of definite hypertension and cardiovascular events than the general population Oscar A. etal (2000).

Table 1. Classification of blood pressure for adults Adapted from JNC 7th. Report (2004)
<table>
<thead>
<tr>
<th>Blood Pressure (mm Hg)</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;120/80</td>
<td>Normal</td>
</tr>
<tr>
<td>120-139/80-89</td>
<td>Pre-hypertension</td>
</tr>
<tr>
<td>≥140/90</td>
<td>Hypertension</td>
</tr>
<tr>
<td>140-159/90-99</td>
<td>Stage 1</td>
</tr>
<tr>
<td>160-179/100-109</td>
<td>Stage 2</td>
</tr>
</tbody>
</table>

**Causes of Hypertension**

There are two basic types of hypertension: primary (essential) hypertension and secondary hypertension. The vast majority of patients (90-95%) have essential hypertension which is a form with no identifiable underlying cause. This form of hypertension is commonly treated with drugs in addition to lifestyle changes (e.g., exercise, proper nutrition, weight reduction, stress reduction).

Renal artery stenosis, chronic renal disease, Primary hyperaldosteronism, Stress, Sleep Apnea, Hyper or hypothyroidism, Pheochromocytoma, Preeclampsia, Aortic coarctation, Medications.

**Signs and symptoms**

Hypertension also referred as the silent killer. Most people who have high blood pressure usually do not have symptoms. In some cases Kaplan NM (2011) people with high blood pressure may have a pounding feeling in their head or chest, a feeling of lightheadedness or dizziness. Other signs include ear noise or buzzing, irregular heartbeat, nose bleeding, tiredness and vision changes. If there are no warning signs, people with high blood pressure may go years without knowing that they have the condition.

**Risk factors for Hypertension:**
Hypertension is the commonest cardiovascular disorder posing a challenge to the societies in socioeconomic and epidemiologic transition. **WHO (1996)** as the population ages, the prevalence of hypertension increases. Data emerging from the Framingham Heart study suggested a 90 percent residual lifetime risk of developing hypertension for individuals aged 55 and older with normal blood pressure. **Vasan RS, etal (2001).**

There are many risk factors associated with coronary heart disease and stroke. The major risk factors are tobacco use, alcohol use, high serum cholesterol, obesity, physical inactivity and unhealthy diets in whom there is a high prevalence of BP across the world. The particular significance in developing countries is the fact that while they are grappling with increasing rates of cardiovascular disease but they still face the scourges of poor nutrition and infectious disease.

**Modifiable risk factors**

Abnormal blood lipid levels that is high total cholesterol, high levels of triglycerides, high levels of low-density lipoprotein or low levels of high-density lipoprotein (HDL) will all increase the risk of heart disease and stroke. (World heart federation)

Tobacco use, whether it is smoking or chewing tobacco increases the risk of cardiovascular disease. The risk is especially high if patients started smoking when young or smoke heavily or is a woman. Passive smoking is also a risk factor for cardiovascular disease.

Physical inactivity increases the risk of heart disease and stroke by 50%. Obesity is a major risk for cardiovascular disease and predisposes you to diabetes. Diabetes is a risk factor for cardiovascular disease which affects 4 to 5 percent of the population and a greater proportion of the indigenous population. High glucose levels in the blood damage arteries in a similar way as high Blood pressure. But it would not do to paint too gloomy a picture.

**Non-modifiable risk factors**

Simply getting old is a risk factor for cardiovascular disease and risk of stroke doubles every decade after the age of 55 yrs.

Family history of cardiovascular disease is also a risk factor. If a first-degree blood relative has had coronary heart disease or stroke before the age of 55 years (for a male relative) or 65 years (for a female relative) the risk increases.

Gender is significant: as men are at greater risk of heart disease than a pre-menopausal woman. But once past the menopause, a woman’s risk is similar to a man’s. Risk of stroke is similar for men and women.
High blood pressure can lead to hypertension complication in other parts of the body because of the damage to the blood vessels and excessive pressure on the artery walls can damage vital organs. The higher your blood pressure and the longer it goes uncontrolled, the greater is the damage.

**Complications of hypertension:**

High blood pressure can lead to hypertensive complications in other parts of the body because of the damage to the blood vessels and excessive pressure on the artery walls which damages vital organs. The higher blood pressure and the longer it goes uncontrolled, the greater the damage. *Kaplan NM (2007).*

Uncontrolled high blood pressure which leads to hypertensive complications includes: Heart Attack, Stroke or heart attack, Kidney failure or Kidney damage, Loss of vision and Sexual dysfunction. Angina pectoris.

**Pharmaceutical care**

Pharmaceutical care is an example of a patient care system depending on partnership and a team approach. The Pharmaceutical Care concept is defined as: the responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient’s quality of life *Helper CD (1989).* This practice is delivered when an assessment is performed, a care plan developed, and a follow up evaluation is completed for a patient at each visit at the pharmacy. The assessment consists of a systematic medication review by the pharmacist to identify drug related problems and other health problems. The next step – the care plan – consists of a definition of patient goals in collaboration with the General Practitioners (GP) and the pharmacist’s intervention to resolve possible problems by reinforcing compliance and reporting drug problems to the General Practitioners (GP) that may require drug therapy adjustments.

The next important role of pharmacist in chronic disease like hypertension and other co-morbidities,*Dighore PN, Patil PH (2009)* the patient needs to take continuous medication for a lifelong and some will be on Polypharmacy. In Indian rural setup, majority of the patients are illiterate and have poor health literacy, they may lead to misuse of drugs or improper usage or drug induced disorders or failure of ongoing treatment. The Safe and effective drug therapy depends on, patients being well-informed about their medication. For rational use of medication
the only tool is “patient counseling”. So there is a need of proper advice or counseling for improving their health condition.

The role of pharmacist in the management of hypertension.

The JNC 7th report recommends the involvement of Pharmacists have a number of opportunities for helping implement, including:

- Educating the old age patients on the importance identifying and managing SBP;
- Checking the risk individuals with pre-hypertension and talking with them about lifestyle modifications to lower BP;
- Recommending appropriate drug therapies to health care professionals and ensuring patients are titrated to Dose;
- Patient counseling has to be carried out why multiple medications may be needed, how they work together and why adherence to their therapies is so important;
- Providing self monitoring blood pressure equipment to patients and teaching them how to use them properly.

In response to a recognized need and new evidence-based suggestions, the World Health Organization WHO (2003) released a revision of its statement on the management of hypertension. The WHO estimated that the condition accounted for 4.5% of the global disease burden and attributed the increase in hypertension to increasing contributing factors and coexisting cardiovascular risk factors such as obesity, poor diet, lack of physical activity, and smoking. Given the large scale and modifiable nature of the problem, it certainly merits the attention of the health care community.
In America, the impact is no less impressive. According to the Healthy People 2010, about 50 million adults in the United States have hypertension and the average age of the hypertensive population is increasing as the general population ages CDC & NIH, (11 2000). Therefore, the goals include to reduce the proportion of the population that is hypertensive and to increase the proportion of hypertensive individuals whose blood pressure is controlled. Looking specifically at the issue across the adult lifespan, one recent study reported that in the United States between 2003 and 2004 the prevalence of hypertension defined as blood pressure ≥ 140/90 or the use of antihypertensive medications was “7.3±0.9%, 32.6±2.0%, and 66.3±1.8% in the 18 to 39, 40 to 59, and ≥60 age groups, respectively” Ong, Cheung, etal (2007). Within the next several years a greater proportion of the population will be older adults as the “baby boomers” enter older age groups. Therefore, a greater proportion of the population is likely to face this health issue in the future. Consequently, it is appropriate to examine how well the condition is being managed currently.

Hypertension is the commonest cardiovascular disorder affecting about 20% adult populations worldwide. It is an important risk factor for cardiovascular mortality. WHO (1996). Reports suggest that the prevalence of hypertension is rapidly increasing in developing countries and is one of the leading causes of death and disability in developing countries. Kearney PM etal (2005) Cardiovascular diseases are projected to cause 4.6 million deaths in India by 2020. Rodgers A, Lawes C (2000)

Hypertension being one of the most common lifestyle cardiovascular disease found not only in Urban India but now it has started gaining roots in the rural India too. According to the statistics the cases of Hypertension has increased 10 times in last 4 decades in rural India and almost 30 times in urban India. VK Agrawal, etal (2008).

What are the Implications of Poor Adherence
Poor adherence has several implications for patients’ health outcomes and the economy Horne R (1993), WHO 2003. In terms of patients’ health outcomes, poor adherence to therapy results in
poor therapeutic efficacy and lack of realization of treatment goals (Meeting the challenge of patient adherence).

Barriers to the effective use of medicines specifically include poor provider-patient communication, inadequate knowledge about a drug and its use, not being convinced of the need for treatment, fear of adverse effects of the drug, long term drug regimens, complex regimens that require numerous medications with varying dosing schedules Leupkar RV (1971) cost and access barriers Osterberg L (2005).

It has also been observed that patient’s non adherence varies between and within individuals as well as across time, recommended behaviors and diseases Sewitch MJ et al (2004). Adherence to drug therapy varies with patient’s age group also. In children adherence to drug therapy is affected due to their dependence on an adult care giver. The literature concerning adherence reports in elderly patients reports that compliance rates range roughly from 38%-57% with an average rate of less than 45% Sackett DL (1997). Thus, it is evident from literature that adherence is a significant issue for hypertensive patients.

Prevalence and general impact of medication nonadherence

When medication non-adherence exists, serious consequences can arise including poorer health, additional health care costs and loss of independent living. Medication non-adherence has been linked to poorer outcomes, in that individuals with high medication adherence have 20% better outcomes than individuals with low medication adherence DiMatteo, Giordani et al (2002). In addition to reducing treatment benefits, medication non-adherence is also associated with poor prognosis Irvine, Baker et al (1999). The negative outcomes associated with all medication errors, of which inability to administer medications and non-adherence is one component, include admission to hospitals and long term care institutions, increased physician visits and in some cases, death Dennehy, Kishi et al (1996) Gray Mahoney et al. (1999) White, T J et al. (1999). While non-adherence was the cause for 8% of admissions to emergency rooms (63% of it being intentional non-adherence), it attributed to 11% of admissions to acute care hospitals Col, Fanale et al. (1990) Malhotra, Karan et al. (2001).

Adhering to prescribed medication is critically important for controlling blood pressure and reducing the associated risk of cardiovascular complications such as stroke Albert, N. M
Thus to combat poor medication adherence pharmacist must identify non adherent patients found that patients who were referred to hospital because of elevated hypertension and during the hospital stay their drug intake was checked, the BP was lowered for both systolic and diastolic, though at that time hospital was using same drugs which patients used before. When patients do not follow the doctor’s prescription it is likely that their symptoms may worsen and lead to complications. This can further lead to increased use of hospital and emergency room (ER) services, office visits, and other medical resources Schlenk, E.A, (2001).

Patient counseling:

Patient counseling is defined as providing the medication related or disease related information to the patient or patients representative in oral or written form. Amount of information during the counseling ranges from complete details on disease, drugs, diet and life style changes to basic information of drugs, like name, dose, duration and storage.

Outcomes of effective patient counseling:

Effective patient counseling will yield the following benfits:-

- Patients will recognize the importance of their medications.
- Patients feel that they are the part of the disease management.
- Improves the coping strategies to deal with medication side effects and drug interactions.
- Develops the ability among the patients to make appropriate medication related decisions.
- Develops very good professional relationship between pharmacist and patient.
- Improves the patient compliance.
- Improves the quality of life especially in chronic disorders such as diabetes, hypertension and asthma.
- Decrease indirectly healthcare costs by improving the life.
- Minimize the medication errors.

Depending on the situation and need, counseling can be done for two minutes to thirty minutes. Conducive environment, patients interest, patients availability, pharmacist approach are very important factors for the success of patient counseling session.

USP counseling guidelines suggests four stages in counseling such as counseling introduction, content, process, and counseling conclusion. USP has listed about 175 various counseling items that can be used during the counseling. But in Indian condition to begin with, about 15 min items may be sufficient. As per the need and time, few or all these items
can be used. Following are the counseling items, which disturbed in to four stages such as counseling introduction, counseling content, counseling process, and counseling conclusion.

1. **Counseling introduction:**
   - Introduce the self to the patient and review the patient medication record.
   - Obtain the previous medication history such as allergies, and usage of other medications such herbal medicines, home remedies and homeopathic medications.

2. **Counseling content:**
   - Discuss the name and indication of the medication.
   - Explain the dose and duration of the medication.
   - Give storage and ancillary instructions.
   - Explain how long the drugs takes time to show the desired therapeutic benefit.
   - Possible side effects, drug interactions and strategies to overcome them.
   - Assess the adherence problems and provide strategies to improve upon the adherence.

3. **Counseling process**
   - Use suitable counseling aids like patient information leaflets and pictograms.
   - Use appropriate verbal and non-verbal communication skills.

**OPERATIONAL DEFINITIONS**

**Knowledge**

It refers to the response to the items on hypertension as measured by knowledge questionnaire and expressed in terms of knowledge score i.e. high, moderate or poor.

**Attitude**

Attitude is an interact in a certain way to certain situations, to see and interpret events according to certain predispositions or to organize opinions into coherent and interrelated structures.

**Practice**

It refers to the activities or health change in behavior that is actually accepted and followed by hypertensive patients as a part of life.
Adherence
It is defined as behavior of the patient’s towards medication therapy for the prescribed medications

Quality of life
Quality of life of patients undergoing treatment, either pharmacological or not, may be affected by the side effects of the drugs, the diseases that may be associated to the hypertension, the necessity of changes in the lifestyle and also by the diagnosis of the disease, which apparently causes the loss of the body silence and the presence of the disease as a factor of death, thus changing quality of life