Compliance of Hypertensive Patients with Treatment Regimen and Its Effect on Their Quality Of Life

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Abstract: *Non adherence to high blood pressure therapy results in uncontrolled high blood pressure, poor clinical outcomes and preventable health care costs. The management of hypertensive patients aims to improve their quality of life, prevent complications, and decrease mortality through patient's compliance to treatment regimen.* ***This study aimed t****o determine the compliance of hypertensive patient with treatment regimen and its effect on their quality of life. It was conducted in the outpatient department of the Health insurance and Rural Health Unit (El-Halafy) which affiliated to Ministry of Health of in Kafr EL-Sheik governorate. Total study sample was300 hypertensive patients. Three tools were utilized to obtain the necessary data for the study as follows:*
Tool I*: A structured interview questionnaire sheet which composed of three parts part I: socio-demographic characteristics of the patient. Part II: Health history and patients' life style. Part III: Patient knowledge about hypertension.*
Tool II*: Hill-bone compliance scale.*
Tool III*: Health related quality of life scale (HRQOL).*
Result: *About two third of the total sample from both rural and urban had fair to poor score concerning their compliance with treatment regimen. Factors that affect patients' compliance were their age, sex, level of education, employment, income and duration of disease. Regarding HRQOL, the highest proportion of the studied sample had poor score concerning their physical function, role limitation due to physical function, bodily pain, social functioning, role limitation due to emotional problem and general health perception.*
Recommendation: *A healthy lifestyle patient education, family counseling and social support network should be strengthen in health promotion programs in order to enhance compliance of hypertensive patients with treatment regimen and to improve their quality of life.*
Keywords: *Adherence; compliance; medication management; high blood pressure; hypertension; and quality of life*

I. Introduction

Hypertension is a major health problem throughout the world because of its high prevalence and its association with increased risk of cardiovascular disease [1]. Hypertension is defined as abnormally high arterial blood pressure involving high systolic and/or diastolic levels. It means persistent systolic blood pressure (SBP) equal to or greater than 140 mmHg and/or persistent diastolic blood pressure (DBP) equal to or greater than 90 mmHg .This elevation of both systolic blood pressure (SBP) and diastolic blood pressure (DBP) is well recognized as an important risk factor for cerebrovascular accidents (CVA), congestive heart failure (CHF) coronary artery disease (CAD), end-stage renal failure (ESRF) and sudden death [2-5].

The World Health Organization (WHO) and the International Society of Hypertension (ISH) have adapted limits in order to define the various grades of hypertension as mild (greater than 140/90 but less than 160/100); moderate (less than 180/110); severe (less than 210/120); and very severe (greater than 210/120) [6].

Hypertension is classified according to its cause as primary hypertension (essential or idiopathic) and secondary hypertension. Secondary hypertension accounts for approximately 5-10% of all cases of hypertension and results from an underlying, identifiable cause. In the remaining 95% of the cases, no known cause is being recognized despite of the extensive medical examination [2,7].

The World Health Organization estimates that nearly 1 billion people in developed and developing countries are affected with hypertension. It is the third largest killer in the world, about 1 in 8 deaths worldwide is due to hypertension [8,9].

The prevalence of hypertension in the United Kingdom (at least ≥140/90 mm Hg or on treatment for hypertension) in those aged over 35 was 32% in men and 27% in women. The prevalence significantly increased with age in both sexes, about 33% of men and 25% of women aged 45-54 years have hypertension and about 73% of men and 64% of women aged ≥75 years or older have hypertension [10].

Egyptian National Hypertension Project estimate the prevalence of hypertension in Egypt is 26.3%. The prevalence of hypertension has increased progressively with age, from 7.8% in 25- 34year-olds to 56.6% in those 75 years or older. According Egypt demographic and health survey (EDHS 2008); urban residents were slightly more likely to be hypertensive than rural residents. [11,12].

Hypertension is a common chronic disease amenable to control by appropriate medication or adopting relevant lifestyle modifications. However, a lack of knowledge about the severity of the disease and the importance of adhering to the prescribed treatment, Long term drug regimens, complex regimens that require numerous medications with varying dosing schedules, cost and a lack of motivation to make some lifestyle changes in terms of diet and physical exercise may constitute barriers to compliance behavior(13).

Compliance is defined as an act of adhering to the regimen of care recommended by the clinician and persisting with it over time. Compliance consists of three components namely, acceptance of medication prescribed, adhering to it and continuing with it. Thus compliance is a complex and dynamic health enhancing behavior that involves acts of appointment keeping, obtaining and ingesting medications and persisting with health provider [13-16]

Compliance with treatment at the individual level improves the quality of life by preventing complications and thereby premature death. To the immediate family, it prevents the negative psychological impact associated with sudden death or living with a family member suffering from a chronic debilitating disease such as a stroke. It also conserves family resources that would have been utilized to obtain health care, and to the larger society, compliance with drug treatment is a cost saving measure since it decreases the incidence of complications and the need for additional medications [13,17].

Health related quality of life (HRQOL) refer to the physical, psychological, and social domains of health, it is the distinct areas that are influenced by a person's experiences, beliefs, expectations, and perceptions. Individuals' perceptions of their quality of life may be affected not only by their illness but also by their therapy. Many patients with mild to moderate hypertension have no symptoms. Nevertheless, antihypertensive drug therapies are frequently associated with unpleasant side effects that may have an impact on many aspects pertaining to quality of life [18].

Community health nurse, can play an important role in facilitating patient adherence to the prescribed treatment regimen. As they responsible to help patients gain knowledge, skills and change attitude necessary to maintain compliance, they plays an important role on helping the person learn to live with and control his hypertension, to encourage compliance with antihypertensive therapy [18]. Therefore this study will be conducted to compare compliance with antihypertensive therapy between rural and urban patient and their quality of life [12,18].

The aim of this study was to determine the compliance of hypertensive patients with treatment regimen and its effect on their quality of life.
Research question:

- What is the extent of hypertensive patients' compliance with treatment regimen?
- Is the compliance with treatment regimen has an effect on the quality of life of hypertensive patients?

Ethical consideration:
- Patients' informed consent was obtained.
- They were informed about their rights to refuse or withdraw at any time.
- The data collection tools were anonymous, and total confidentiality of the information obtained was ensured.

II. Materials

Study design:
Descriptive cross sectional study design.

Setting:
The study was conducted in the Outpatient Clinics of the Health Insurance in kafr EL-Sheik and Rural Health Unit (El-Halafy) which affiliated to Ministry of Health of in kafr- EL-Sheik governorate.

Subject:
A convenient sample of three hundred (300) hypertensive patients from the previous settings was included in the study (150 from rural health unit and 150 from urban health insurance outpatient clinics). The sample was selected to meet the inclusion criteria (all persons aged 30-50 years old from both sexes, have any type of

hypertension and those able to communicate). The study subjects included those who are willing to participate in the study.

Data collection tools;
Three tools were used by the researcher in order to obtain the necessary data for the study.
Tool I: A structured interview questionnaire sheet that was developed by the researchers according to literature review. It contained **70** questions, divided into three parts. Part 1: demographic data of the patients (**8** questions) include Age, Sex, marital status, occupation, educational level, income, residence, and family number. Part 2: personal health history and life style (**50**questions) which cover data about onset of disease, duration of the disease, treatment regimen, regularity of treatment time, number of blood pressure measurement, presence of diseased persons and kinship in addition to the data about their lifestyle as: daily activity, physical effort, sleeping pattern, health habits as smoking , and nutrition habits as amount of tea and coffee received daily ,salty and fatty food, and amount of daily fluid. Part 3: patient's knowledge about hypertension (**12** questions) addresses questions relevant to knowledge of patient about hypertension **as:** Definition, causes, risk behaviors, measure to control and reason for non compliance. In addition to patient′s knowledge regarding medication as: name of the drugs, dose, route, time and action of medication. Scoring **system of participants' knowledge was done as follows,** each question had a group of answer points, one point was awarded for each correct answer; incorrect or missed answer took zero. There are **4** questions has more than one answer. The scores obtained for each set of questions was summed up to get the total score for participants' knowledge. Total score for all questions reached 32 degrees.

The knowledge scores were classified as:-
❖ Poor knowledge: less than 50% (the participant score < 16 considered poor knowledge)
❖ Fair knowledge: 50 - < 70% (the participant score $16 - < 22$ considered fair knowledge)
❖ Good knowledge: 70% or more (the participant score ≥ 22 considered good knowledge)

Tool II: Hill-Bone Compliance to High Blood Pressure Therapy Scale [19] which developed by hill-bone in the year (2000) to assess the compliance of hypertensive patients. This scale assesses patient behaviors for three important behavioral domains of high blood pressure treatment: 1) reduced sodium intake; 2) appointment keeping; and 3) medication taking. This scale is comprised of 14 items with four point response format. The scoring system was as follow, all the time takes 4degree, most of time take 3degree, sometimes 2 degree and never take 1degree.

Tool III:- Health related quality of life scale (HRQOL) [20]**:-** This scale was developed to assess the patient(HRQOL).The researcher use the SF-36 which is a multidimensional questionnaire, composed of 36 items, to covers eight domains of health: functional capacity(10 questions from 3 to 12), physical aspects(4 questions from 13 to16), bodily pain (2 questions from 21 to 22), overall health status(4 questions from 33 to 36), vitality (9 questions from 23 to 31), social aspects (Q:20), emotional aspects (3 questions from 17 to 19), mental health (2 questions from 1 to 2) , in addition to one question that assess the difference between the current health status and the status one year prior(Q:32).

III.   Method
1-Obtaining approvals
        Official permission to conduct the study was obtained by the researchers from the administration of health affairs of Kafr El- Sheik Governorate and subsequently official letters were directed to the director of the selected rural health unit and health insurance clinics to facilitate the researchers' work.

2-Developing the tools
        The structured interview questionnaire sheet was developed based on literature review. The developed tool was distributed to a jury of 6 academic professors in public health to test their validity. Accordingly corrections and modifications were done. A pilot study was carried out on on20 hypertensive patients to test the tool for relevance, clarity and reliability. Data collected from pilot part of the study were excluded from the final sample.

3- The actual study
• The collection of the data continued during a period of four months starting from beginning February2013 to May 2013.

- Informed consent was obtained from the chosen hypertensive patients to participate in the study and informed them about the purpose of the study and the confidentiality of any information given to the researchers.
- The structured interview questionnaire done individually at outpatient clinics of the health insurance hospital in kafr el sheik city and rural health unit in El-halafy village.
- The data was collected by administering the interview questionnaire sheet to each patient individually to complete it by his / herself with the attendance of the researcher to offer guidance and clarification when needed.
- The average time spent for collecting data from each person was approximately 30-40 minutes to complete the interview and complete question of hill-bone scale and question of health related to quality of life scale question.
- The quartile of calculated percentage score for both patients' compliance and their quality of life were identified. For the total score percentage for quality of life, poor level was considered if the total score percentage was below 60% , fair if the total score percentage was 60-70% and good if the total score percentage was >70%. As for the level of compliance, poor level of compliance was that score percentage below 35% while fair was 35-45% and good >45%.

4- Statistical analysis

The collected data were organized, tabulated and statistically analyzed using Statistical Package of Social Studies (SPSS) version 19. For numerical data, the range, mean and standard deviation were calculated. Differences between mean values between the two different groups were tested using student's t test. The association between two variables was calculated by Pearson's correlation coefficient (r). For categorical variables, the number and percentage were calculated. Differences between categories of each variable were statistically analyzed using chi square test (X^2). Whenever chi square was not suitable, Fisher and Monte Carlo exact tests were used as tests of significance. The level of significance was adopted at $p < 0.05$.

IV. Results

Table (1): Shows the distribution of studied groups according to their knowledge about hypertension. The table revealed that the highest proportion of the rural and urban sample had lack of knowledge about hypertension as regard the value of high blood pressure (49.3%,44.7%) respectively, the reason (62.7%,72%) respectively ,controllable or not(69.3%,70%) respectively ,continuation of treatment (58%,81.3%)respectively and effect of weight reduction on hypertension (58.7%,68%) respectively .

As regard the manifestation of hypertension, less than half of the rural sample was able to identify only two out of six manifestations which were blurred vision (49.3%) and headache (45.3%) while more than three quarters of the urban sample were able to identify blurred vision (92%) and dyspnea (76.7%) as manifestations of hypertension. 58% of rural group and the majority (81.3%) of urban group don't know if antihypertensive treatment can be stopped or not. The difference was statistically significant where (P=0.001). More than one half (58.7% and 68%) of rural and urban sample don't know that reducing weight aid in controlling hypertension. The difference was not statistically significant where (P=0.184).

Table (1): Studied subjects' distribution according to their knowledge about hypertension.

Variables	Rural		Urban		X^2	P
	N	%	N	%		
High blood pressure if it is					0.968	0.616
140/90	40	26.7	40	26.6		
160/100	36	24.0	43	28.7		
Don't know	74	49.3	67	44.7		
Reasons for hypertension:						
No reason	13	8.7	6	4.0	2.753	0.097
Kidney disease	10	6.7	7	4.7	0.651	0.454
Liver disease	8	5.3	24	16.0	8.955	0.003*
heart disease	16	10.7	24	16.0	1.846	0.174
All of the above diseases	12	8.0	1	0.7	9.729	0.002*
Don't know	94	62.7	108	72.0	2.970	0.085
Manifestations of hypertension						
Blurred vision	74	49.3	138	92.0	65. 866	0.001*
Headache	68	45.3	78	52.0	1.334	0.248
Coma	5	3.3	4	2.7	FE	1.000
Dyspnea	49	32.9	115	76.7	57.855	0.001*
Chest pain	5	3.3	1	0.7	FE	0.214
Nausea	9	6.0	2	1.3	4.624	0.032*
Vomiting	8	5.3	2	1.3	3.724	0.054

All of above	19	12.7	1	0.7	17.357	0.001*	
None	2	1.3	1	0.7	FE	0.624	
Don't know	36	24.0	1	0.7	37.766	0.001*	
Hypertension may show no manifestations					9.909	0.007*	
Yes	23	15.3	45	30.0			
No	30	20.0	20	13.3			
Don't know	97	64.7	85	56.7			
Hypertension can be controlled:					MCET	0.353	
Yes	40	26.7	43	28.7			
No	6	4.0	2	1.3			
Don't know	104	69.3	105	70.0			
Can stop antihypertensive treatment:					24.722	0.001*	
Yes	27	18.0	20	13.3			
No	36	24.0	8	5.4			
Don't know	87	58.0	122	81.3			
Reduce weight control hypertension:					3.385	0.184	
Yes	54	36.0	44	29.3			
No	8	5.3	4	2.7			
Don't know	88	58.7	102	68.0			

*Significant

Figure (1): Shows the percentage distribution of studied groups in relation to level of compliance with hypertension management. It was clear that the rural subjects were more compliant to treatment regimen than urban subjects. This figure showed that, more than half of urban subjects (52.7%) had fair level of compliance with management, followed by 28% had poor level of compliance with hypertension management and only 19.3% of them had good level of compliance with hypertension management. On the other hand, more than half of the rural subjects (53.3%) had good level of compliance with management, followed by 30% had fair level of compliance with hypertension management and only 16.7% of them had poor level of compliance with hypertension management. There was significant difference between the two groups (P=0.001) .
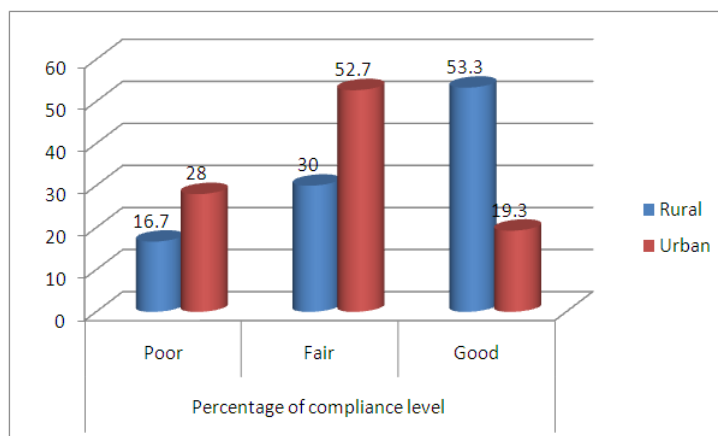

Figure (1): Percentage distribution of the studied groups in relation to level of compliance with hypertension management.

Table (2): Shows the relation between socio demographic characteristic and level of compliance. The highest proportion of the total sample (rural and urban) had fair level of compliance with hypertension management in relation to the socio-demographic characteristic More than 40% of them was 30 years to less than 35years, males, working, had intermediate education, had family size3-5 members, receiving enough monthly income and their duration of illness10 years or more (58.8%,50%,46.4%,46%43.5%,48.1%) respectively. There were significant differences in relation to age, gender, job, educational level, family size, monthly income and duration of hypertension (P= 0.004, 0.001, 0.001, 0.001, 0.010, and 0.005) respectively.

Table (2): Relation between socio-demographic characteristics of studied groups and level of compliance.

Variables	Level of compliance						P
	Poor		Fair		Good		
	N	%	N	%	N	%	
Age in years:							0.004*
30-	7	20.6	20	58.8	7	20.6	
35-	9	12.9	40	57.1	21	30.0	
40-	12	23.5	20	39.2	19	37.3	

45-50	39	26.9	44	30.3	62	42.8	
Gender:							0.001*
Males	20	14.5	69	50.0	49	35.5	
Females	47	29.0	55	34.0	60	37.0	
Job:							0.067
Working	29	22.5	62	48.1	38	29.5	
Not working	38	22.2	62	36.3	71	41.5	
Educational level:							0.001*
Illiterate	11	9.7	48	42.5	54	47.8	
Read & Write	16	20.0	32	40.0	32	40.0	
Intermediate	23	41.1	26	46.4	7	12.5	
High	17	33.3	18	35.3	16	31.4	
Family size:							0.001*
2	0	0.0	2	14.3	12	85.7	
3-5	50	25.0	92	46.0	58	29.0	
>5	17	19.8	30	34.9	39	45.3	
Monthly income:							0.010*
Enough and saving	20	39.2	19	37.3	12	23.5	
Enough	30	16.9	77	43.5	70	39.5	
Not enough	17	23.6	28	38.9	27	37.5	
Duration of illness:							0.005*
1-	25	20.8	47	39.2	48	40.0	
5-	39	30.5	52	40.6	37	28.9	
10+	3	5.8	25	48.1	24	46.2	

*Significant

Figure (2): Shows the percentage distribution of studied sample in relation to level of quality of life. It showed that about two thirds of both rural and urban subjects had fair quality of life (65.3% and 66.7%) respectively; while 24% of urban subjects had good quality of life compared to only 13.4% of rural subjects. The lower proportion of both rural and urban subjects had poor quality of life (21.3% and 9.3%) respectively. There was significant difference in relation to residence between the two groups (P= 0.003).
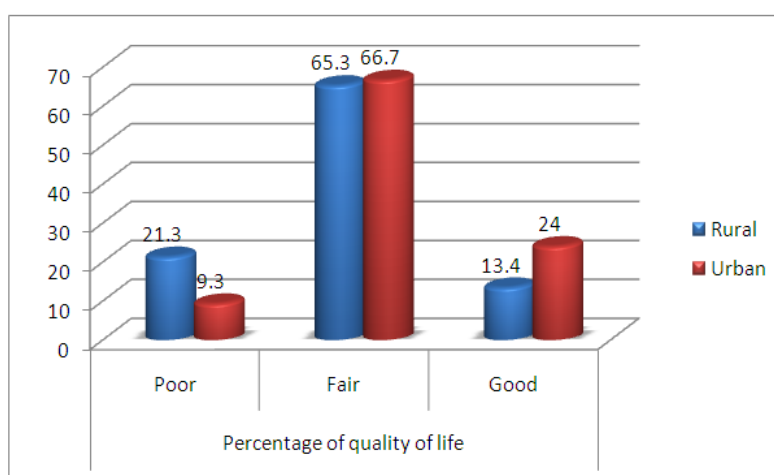

Figure (2): Percentage distribution of the studied groups according to quality of life.

Figure (3): Show the distribution of studied groups in relation to level of quality of life of different domains. The Figure revealed that almost the entire studied sample (100%) had poor score concerning to physical function, role limitation due to physical function, and role limitation due to emotional problem. As regard the other domains like bodily pain, social functioning, and general health perception the highest frequencies reported poor level of quality of life (65.3%, 83.0%, and 70.7%) respectively. On the other hand, 62.3% of studied sample had fair score in relation to mental health and 65% of studied sample had fair score concerning to vitality, energy or fatigue
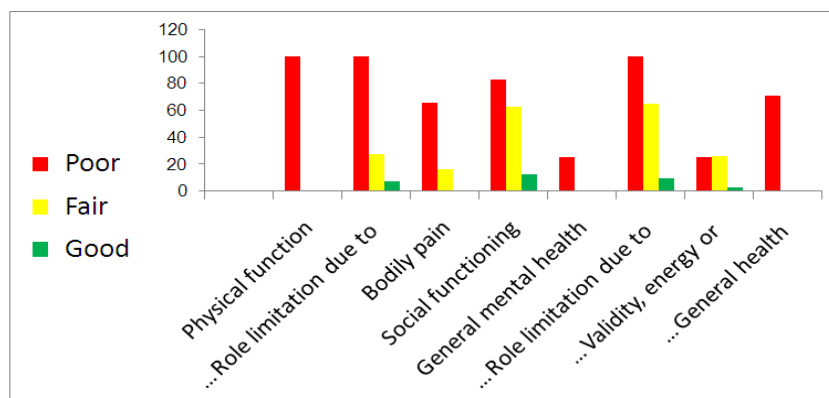
Figure (3): The studied groups in relation to level of quality of life of different domains

Table (3): Shows the relation between socio demographic characteristic and level of quality of life. The high proportion of the studied sample had fair quality of life in relation to socio demographic characteristics. More than 70% of them had 30years to less than 35years ,are males ,working ,with high education , family size of two members and had enough monthly income(70.6%,73.2%,75.2%,74.5%,71.5%,71.8%) there were significant differences in relation to gender ,job ,family size ,monthly income and residence (P= 0.030, 0.007, 0.033, 0.020, and 0.003) respectively.

Table (3): The relation between socio-demographic characteristics of the studied groups and their quality of life.

Variables	Level of quality of life						P
	Poor		Fair		Good		
	N	%	N	%	n	%	
Age in years:							0.256
30-	2	5.9	24	70.6	8	23.5	
35-	9	12.9	46	65.7	15	21.4	
40-	12	23.5	31	60.8	8	15.7	
45-50	23	15.9	97	66.9	25	17.2	
Gender:							0.030*
Males	19	13.8	101	73.2	18	13.0	
Females	27	16.7	97	59.9	38	23.5	
Job:							0.007*
Working	13	10.1	97	75.2	19	14.7	
Not working	33	19.3	101	59.1	37	21.6	
Educational level:							0.123
Illiterate	21	18.6	68	60.2	24	21.2	
Read & Write	14	17.4	55	68.8	11	13.8	
Intermediate	4	7.1	37	66.1	15	26.8	
High	7	13.7	38	74.5	6	11.8	
Family size:							0.033*
2	3	21.4	10	71.5	1	7.1	
3-5	22	11.0	134	67.0	44	22.0	
>5	21	24.4	54	62.8	11	12.8	
Monthly income:							0.020*
Enough and saving	9	17.6	35	68.7	7	13.7	
Enough	23	13.0	127	71.8	27	15.2	
Not enough	14	19.4	35	50.0	22	30.6	

*Significant

Table (4): Shows the correlation between level of compliance, quality of life, age and duration of disease in years. It was found that the quality of life is significantly and negatively correlated to the sample in relation to compliance with hypertension management(r=-0.156). No significant correlation among age of the studied sample and their compliance with hypertension management and quality of life (r= -0.005 and -0.048), respectively. Also, no significant correlation among duration of disease in years among the studied sample and their compliance with hypertension management and quality of life (r= 0.023 and -0.050), respectively.

Table (4): Correlation between level of compliance & quality of life, and age and duration of disease in years of studied groups.

Variables	Compliance with hypertension management		Quality of life	
	R	P	R	P
Age in years	-0.005	0.935	-0.048	0.408
Duration of disease in years	0.023	0.699	-0.050	0.387
Quality of life	-0.156	0.007*		

*Significant.

V. Discussion

Hypertension is one of the most crucial health problems and the most common chronic disease in developed and underdeveloped countries. Although hypertension is a preventable and treatable condition but without treatment it leads to serious and life threatening complications such as heart, kidney and brain disorders which in most cases result in patient's disability. The first line of treatment for hypertension is lifestyle modification. The poor control of high blood pressure is attributed to poor compliance with the treatment regime. Compliance can be viewed as a patient's behavior in terms of timeliness in seeking care, attendance at follow-up appointments or observance of the physician's advice. As compliance improves the outcome of hypertension, understanding its pattern is an important step in evaluating the effect of a hypertension treatment regime [21-23].

The present study was carried out to determine the compliance of patients with hypertension with their treatment regime and its effect on their quality of life. Regarding the knowledge of the patients about hypertension, the result of the present study revealed that the highest proportion of the rural and urban sample had lack of knowledge about hypertension as regard the value of high blood pressure, the reason, manifestations, continuation of treatment and actions to keep blood pressure at normal level (table 1). This may be attributed to the high illiteracy rate among the study sample where the majority of them were illiterate or just read and write. This in agreement with Abed-ELaziz (2000) who reported that, there were misconceptions related to the normal level of blood pressure ,manifestations of hypertension, causes ,and factors to keep blood pressure normally [24].

Muhlauser and Bergert (2000) have suggested that providing health promoting knowledge was not enough for achieving compliance [25]. This is because knowledge is not the only component to achieve compliance, but also positive attitude and behavior. This suggestion was in accordance with the result of this study where no significant relation between knowledge and compliance was found. This result is supported and confirmed by Pascucci et al. (2010) who assert that the association between knowledge and adherence is disconcerted because knowledge in itself is not enough to ensure adherence, but it is necessary for adherence to occur (Pascucci, Leasure, Belknap, & Kodumthara, 2010) [25]. This is an quite sure result as the educational information is usually beneficial for individuals who are motivated to adhere to the treatment regimen but unlearned in regimen process, while individuals unmotivated in adherence and already knowledgeable are unlikely to improve with additional educational information (Becker, 1985) [26]. Thus, client education is essential, although its effectiveness may be questioned, especially when intrinsic motivation is lacking. The same result was in accordance with a study conducted in Alexandria by Saleh, (2009) who reported no significant relation between knowledge and compliance. On the other hand, this result is in contrast with other studies conducted by Soliman in Mansoura (2000), Osterberg and Bllaschke in England (2005), and Mahday (1990) who reported that compliance with the treatment regimen is significantly affected by knowledge [27-30].

Regarding compliance with treatment, the current study revealed that (36.3%, 41.3%, 22.4%) were had good, fair and poor level of compliance with hypertension management respectively (Figure 1). This is may be due to free medical treatment. This finding was in agreement with study done in Oman by Al-Ghanemy et al, (2004) who reported good compliance with treatment regimen among hypertensive patient and nearly equal with the study Duhok by AL-Dabbagh ,(2010) who found that 54% of the patients were compliant to medication [31,32]. Moreover, this result contradicted with the study done in Alexandria by Saleh,(2009)who reported that compliance to treatment regimen was not efficiently followed by the majority of the study sample [28].

Many factor affect the patients compliance, these may be either related to demographic feature of the patients such as age, sex, level of education, occupation, family size, monthly income, residence, family history and duration of illness. The present study revealed that compliance with treatment regimen was significantly affected by age of the patient (table 2), this can be explained as the sample were include middle age patients. This result was in agreement with other studies on hypertensive patient conducted in Egypt, Boston and Baltimore, which indicated that compliance with treatment regimen affected by age of the patients [29,33-34]. In contrast with other studies conducted in Atlanta by Rask et al (2006)and Saleh,(2009) who reported that compliance was not significantly related to the age ,this may be explained as their studies were include only old age patient [28,35].

Concerning the effect of sex, a significant relation between sex and compliance with medication of hypertensive patients was showed in the present study (table 2). This may be interpreted as the majority of male had health insurance which can be visited every month for obtaining free drug and for follow up, while most of female had no health insurance and need to go to special doctor only in emergency cases or when feeling ill. These result are contradicted with Salm and Hassan (2007) and Shafik H., (2000) findings who revealed that no significant relation between sex and compliance with medication [36,37].

Education had a significantly effect on patients' compliance (Table 2). The same observation was reported by Shafik (2000) [37], this result may be due to compliance rate was higher among patients with a low level of education. This might indicate that poor people with low education might be more easily motivated to treatment by doctors, media and colleagues in developing countries. This is in contrast with the study conducted in Australia by Mark et al (2007) who reported that patient's education had a significant impact over patient compliance [38].

Limited income with drug cost, or multiple drug intake will probably affect compliance (table 2). This may explain the result of the present study which revealed significant difference between compliance and monthly income of hypertensive patients. This result is supported by other studies conducted in Saudi Arabia and Sudan by Khalil and EL-Zubier who found that the limited income will probably affect compliance particularly if the drug is expensive or if the patient is receiving multiple drugs [39]. In contrast by other studies conducted in Alexandria on hypertensive patients (2000-2007-2009) who found that no significance difference between compliance and monthly income of hypertensive patients [28,36-37].

Duration of chronic disease may affect patients' compliance with treatment regimen. The longer the duration of the disease, the more evident to become noncompliant, the present study revealed no significant difference between duration of the disease and compliance with treatment regimen (table 2). This is in accordance with a study conducted in Egypt by Abed El-hamid,(2005) reported that the duration of the disease had no significant effect on patient compliance [40]. In contrast to this finding Prattz and Jones in Binslivania, (1995) reported that an extended duration of the disease correlates with decreased medication compliance [41].

Regarding health related quality of life, the current study revealed that hypertensive patients presented a fair HRQOL scores in SF-36 (Figure 2). This result is in concomitants with Gusmao JL et al, (2009) who showed that a special care program for hypertensive patients reduced blood pressure and significantly increased blood pressure control without greatly affecting the HRQL [42]. It is important to note that hypertensive patients with higher distress levels, more co-morbidity, and have complications from their disease have a different quality of life and degree of blood pressure control compared to hypertensive patients without complications.

However, the scores obtained from the eight domains of the SF-36 demonstrated that the functional capacity and overall health status domains had the worst HRQL scores, whereas the vitality and mental health domains had the highest scores in both rural and urban sample group (Figure 3). This finding may be explained by the impact of hypertension on quality of life and support the suggestion that people with hypertension tend to have a better coping mechanism and adaptation to this disease, this is consistent with other HRQOL studies (Bardage and Isacson, 2001; Erickson et al., 2004; Wang et al., 2009; Poljicanin et al., 2010) which showed that hypertension was associated with alterations in HRQOL. This might suggest that hypertension causes some changes in patient's life [43-46].

Regarding the relation between socio demographic characteristics and level of quality of life. The high proportion of the studied sample had fair quality of life in relation to socio demographic characteristics.

As regards the age, the present study showed that no significant relation between age and quality of life but revealed that younger patients (30-35 years) had better HRQOL (table 2). This result may be due to the effect of the aging process, where health hazards may arise as a result of physiological and functional changes, making the individual more vulnerable to chronic diseases which can affect HRQOL and compromise the physical aspects. This result is in agreement with Carvalho et al, 2013 who found better HRQOL scores in younger hypertensive patients compared to older patients [47].

There was a significant relation between gender, and quality of life. Hypertensive males had better HRQOL than female(table 5) .This can be explained as men are more tolerant to chronic diseases, and thus less emotionally affected by it when compared to women. This result is in agreement with Carvalho et al, 2013 who reported that female gender were associated with lower scores of QOL in several health dimensions [47].

In addition, the present study showed that a significant relation between working and quality of life, employment patient had better HRQOL (table 3). This result may be due to stability of life due to constant income and is in agreement with Theodorou et al,(2011) who showed that employee Participants, had generally better quality of life scores [48].

The current study revealed that a higher level of education among the study participants combined with higher HRQOL scores (table 5), this is because the level of education may influences the ability to understand information, which favors knowledge on the disease and treatment adherence. Therefore, patients with a higher

level of education may have better HRQOL scores. This result is in agreement with Carvalho et al, 2013 who reported that patients with a higher level of education had higher HRQOL scores in the grouped SF-36 scale [47].

Concerning, the relation between monthly income and quality of life, a significant relation was observed. Individuals with higher incomes had higher HRQOL scores (table 2). This result may be due to the financial resources are important in everyday life and in QOL, since they may interfere with the physical and mental states, for they guarantee access to treatment and the possibility to afford medication, in addition providing a peaceful life in relation to the acquisition of goods. This is in agreement with Carvalho et al, 2013 who reported that patients with higher incomes were observed to have higher HRQOL scores [47].

Also, regarding residence the current study revealed a significant relation between residence and quality of life, patients who live in urban area have better HRQOL scores (Figure 2), this result may be due to rural areas offer fewer opportunities for social activities than city areas, and hard for them to participate in community activities and to have access to transport to other locations, which in turn restricts social participation and compromises the QOL. This result is In agreement with Tavares et al,(2013) who showed that those are living in rural area have lower HRQOL scores [49].

The relationship between quality of life and compliance is complex and merits careful study. Monitoring quality of life may be one of the best ways to improve treatment adherence. Therefore, when developing an approach for hypertension treatment, physicians should consider the impact of different antihypertensive on the overall well being of the patient. Consideration of quality of life issues, along with side effects and contraindications, should determine the choice of medication administered.

The current study found that the quality of life is significantly and weak negatively correlated to compliance with hypertension management (table 4).This may be due to compliance of patient with treatment increased when hypertensive patient in sever stage or when having many complications of the disease. This is in agreement with Saleem et al, (2012) who showed that a weak or negligible negative correlation between medication adherence and HRQOL [50].

VI.   Conclusion And Recommendation

Based on the finding of the present study, it was concluded that the compliance of studied group with treatment regimen need to be encouraged. About two thirds of the studied subjects were showing fair or poor level of compliance. The socio-demographic characteristics such as age, gender, educational level, family size, income and duration of illness had an effect on the degree of compliance. The main contributing factors were age and duration of illness which in turn negatively affect their quality of life particularly as regard domains of physical function, role limitation due to physical problems and role limitation due to emotional problems. This study indicated that the hypertensive patients are in a massive need for more knowledge about compliance of treatment regimen and its effect on their quality of life. This need to emphasis on health education of hypertensive patients, whose attend primary health care centers about the complication of hypertension and the importance of compliance to treatment regimen through planned health education programs. Health education campaigns concerning hypertension ought to be delivered through the mass media as radio and television, posters and pamphlets. In addition, a healthy lifestyle patient education, family counseling and social support network should be strengthen in health promotion programs in order to enhance compliance of hypertensive patients with treatment regimen and to improve their quality of life. Finally, additional studies should be conducted for compliance monitoring in order to define more precisely noncompliant patients to have a positive effect on health care cost.

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