Research Article

The influence of the patient health knowledge and management compliance on the health-related quality of life of hypertensive patients in Mallawy center Minia governorate

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Abstract
Background: Hypertension is a chronic cardiovascular disease and is very common. Many lifestyle and behavioral factors affect the occurrence, exacerbation, and complications of hypertension. Hypertensive patient's quality of life is affected by the disease and personal factors like patient knowledge and compliance with the treatment regimen. **Aim of the study:** is to estimate the relationship between hypertensive patients quality of life and patient knowledge and compliance to management. **Subjects and Methods:** A sample of 600 hypertensive patients from the internal medicine outpatient clinics and the Health insurance clinics in Mallawy general hospital and Rural Health Unit of (kalandol) village. The necessary data obtained by A structured interview questionnaire, Hill-bone compliance scale and (HRQOL) scale. **Results:** About 65% of the total sample had fair to poor level of compliance. Age, sex, education, employment, income and duration of disease affect patients' compliance. On the subject of HRQOL, the highest percentage of the hypertensive patients sample had poor scores relating to, role limitation due to physical function, social function, and emotional troubles. **Conclusion:** There is a lack of patient knowledge about hypertension. About 65% of the subjects had poor to fair levels of compliance. Age and the disease duration affect negatively patients' quality of life. **Recommendations:** Patient health education about hypertension. Health promotion programs to enhance compliance of patients with treatment and to advance the patient quality of life.
Keywords: health knowledge; treatment; quality of life; hypertension; and compliance

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Introduction
Hypertension is a worldwide health problem with high prevalence and amplified threat of cardiovascular illnesses and complications[(1)]**.** Hypertension is an abnormally persistent increased systolic BP ≥140 mmHg also persistent diastolic BP ≥ 90 mmHg. Hypertension is an main risk factor for heart failure, Ischemic heart diseases, cerebral strokes, renal failure and sudden death. Hypertension is an increased arterial blood pressure and it either without cause which is called primary hypertension or due to a cause and called secondary hypertension. Secondary hypertension may be due to many causes like arterial atherosclerosis, renal artery stenosis, hyperthyroidism, Cushing syndrome and gestational hypertension (preeclampsia).

There are many predisposing factors of hypertension like obesity, smoking, increased salt intake, increased coffee intake, fatty diet, anxiety, and increased emotional stress[(2-5)]. World Health Organization and International Society of Hypertension defined hypertension degrees as mild hypertension (>140/90 mmHg but <160/100 mmHg); moderate hypertension (< 180/110 mmHg); severe hypertension (< 210/120 mmHg); and very severe hypertension (>210/120 mmHg)[(6)]. Hypertension is etiologically categorized into primary hypertension (idiopathic) and secondary hypertension. Cases of secondary hypertension are about 8% of total cases of hypertension and are due to, identifiable cause. In about 95% of the cases, no known cause is being identified. The clinical picture of hypertension can be symptomless in

many cases but in some cases patient complaining headache, blurred vision, tinnitus or palpitation. There are many complications of hypertension like ischemic heart diseases, heart failure, renal failure, aortic aneurysm, and cerebral stroke. Treatment regimen of hypertension including antihypertensive drugs and diet modification like restricting salt intake, reduce coffee intake, low fat diet and stop smoking. Avoiding emotional stress and anxiety is very important also[2,7]. Nearly one billion people affected with hypertension as reported by the WHO. It is the 3rd largest killer, around 12.5% of deaths worldwide are due to hypertension[8,9] hypertension prevalence in England in people aged over 35years old was 32% in males and 27% in females and this increased with age in both sexes, about 33% of males and 25% of females aged 45-54 years have hypertension and around 73% of males and 64% of females aged ≥75 years have hypertension[10].

In Egypt a national project for hypertension (ENHP) reported that the hypertension prevalence is (26.3%) in Egypt and it has increased with age progressively, from (7.7%) in people aged 25- 34year to (56.5%) in people aged (75) years or older. According to (EDHS) survey; urban populations were a little more likely to be hypertensive than rural populations.[11,12]. Hypertension is a common chronic health problem that can be controlled by suitable medication or implementing lifestyle modifications. Nevertheless, a lack of health knowledge about the disease consequences and the importance of following the long term drug regimens, cost and motivation deficiency to make some lifestyle changes may create obstacles to compliance behavior[13]. Patient compliance is well-defined as the adherence to the care regimen recommended by the physicians and continuing with it all over time. Patient compliance involves three components, acceptance of the prescribed drug regimen, following. [13-16] Patient compliance with treatment improves the quality of life by preventing disease complications. At the level of the family, it prevents the bad psychological effect of sudden death or living with a family member suffering from a chronic incapacitating disease like a stroke. Also, it preserves family resources that would have been consumed to acquire health care, and to the society, patient compliance is cost-saving as it decreases the complications incidence[13,17]. Health-related quality of life (HRQOL) talks about the physical, psycho-logical, and social fields of health; these areas are affected by a person's beliefs, expectations, experiences, and perceptions. Patients quality of life influenced by their illness and also by the therapy. In non-severe cases of hypertension many cases are symptomless. However, antihypertensive drugs are often associated with side effects which may have an effect on many aspects relating to the quality of life[18]. Community health nurses have a dynamic role in enabling patient compliance to the management regimen. As they help patients to gain proper knowledge, skills, and attitude to maintain the patient's compliance[19]. Hypertension is a significant developing countries health problem. Hypertension is preventable and treatable but if untreated it leads to severe complications on heart, brain, and kidney which may cause various disabilities[20]. Lifestyle adjustment is the first line of treatment. The poor control of hypertension is attributed to poor patient compliance with the management regimen. Compliance includes the patient's behavior in terms of relevance in seeking care, attending follow-up schedules or execution 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 rationale of the study

Hypertension is an important, common, serious and complicated health problem in developing countries especially Egypt. Prevalence of hypertension is 26.3% in Egypt and it has increased with age progressively, from 7.8% in people aged 25- 34year to 56.6% in people aged 75 years or older. According to EDHS; urban populations were a little more possible to get hypertension than rural populations.[11,12]. Hypertension is a common chronic health problem that can be controlled by suitable medication or implementing lifestyle modifications. Nevertheless, a lack of health knowledge about the disease consequences and the importance of following the long term drug regimens, cost and absence of motivation to make some lifestyle changes may create obstacles to compliance behavior[13].

The association between patient compliance with treatment and quality of life is complex

and needs careful study and there is lacking of studies in this field. Checking the quality of life is one of the best methods to increase treatment compliance. Consequently, before developing a method for hypertension treatment, doctors should study the effect of different antihypertensive on the patients' general well-being. The attention of quality of life concerns, along with contraindications and, side effects should govern the choice of antihypertensive treatment.

The aim of the study

is to determine compliance with treatment and the the relationship between hypertensive patients quality of life and patient knowledge and compliance to management.

Subjects, Materials, and methods

Ethical consideration:

Patients' were informed about their rights to refuse and verbal consent was obtained. The confidentiality of the patient information obtained was ensured and the data collection tools were unnamed.

Study design: Descriptive cross-sectional study.

Subjects:

It was conducted in the internal medicine outpatient clinics and the Health insurance clinics in Mallawy general hospital and Rural Health Unit of (kalandol) village. The total study sample was 600 hypertensive patients. The necessary data obtained by A structured interview questionnaire (composed of three parts. Socio-demographic characteristics of the patient, Health history and, Patient health knowledge about hypertension). Hill-bone compliance scale. HRQOL scale.

Timing of the study: The collection of the data continued during a period of 9 months starting from the beginning of January 2017 to the end of September 2017.

The inclusion criteria: All hypertensive patients who able to communicate aged 30-50 years old and accept to participate in the research and attending the internal medicine outpatient clinics and the Health insurance clinics in Mallawy general hospital and Rural Health Unit of (kalandol) village during a period of 9 months starting from the beginning of January 2017 to the end of September 2017.

Sampling: A convenient sample of six hundred (600) hypertensive patients were included in the study 300 from and Rural Health Unit of (kalandol) village and 300 from urban internal medicine outpatient clinics and the Health insurance clinics in Mallawy general hospital. The sample was selected to meet the inclusion criteria.

Tools of data collection:

1- An organized interview questionnaire containing, three parts:

- Demographic data of the patients include Age, Sex, marital status, occupation, residence, education, income, and family number.
- Health history and lifestyle data of the patients which include, the disease duration, constancy of treatment, patients lifestyle data as daily activity, sleeping pattern, smoking, and habits as daily consumed amount of tea, coffee salty and fatty food.
- Patient's knowledge about hypertension as causes, risk behaviors, measures to control and causes of non-compliance, medication dose, and time. Scoring of Patient's knowledge for each question the correct answer gives (one point), and (zero) for missed or incorrect answer. The total score for all questions was (32 degrees). The Patient's knowledge scores were categorized to:
- Poor Patient's knowledge score (< 16)
- Fair Patient's knowledge score (16 – < 22)
- Good Patient's knowledge score (≥ 22)

2- Hill-Bone assessment Scale for patient Compliance[19] which evaluates hypertensive patient treatment performances regarding : 1) decreasing intake of sodium; 2) keeping appointment; and 3) taking drugs. The scale is covered fourteen items with (4-point response) format. The counting system was in this way, all the time takes (four degree), most of the time take (three degrees), sometimes (two degrees) and never take (1degree). Poor level of patient compliance was that score percentage below (35%) while the fair was (35-45%) and good compliance (>45%).

3- Health-related_ quality of life scale (HRQOL)[20] which assesses the patient (HRQOL).we use the SF-36 which is a questionnaire, covering 36 items, to covers[8] fields of health: functional capacity, physical aspects, body pain, overall health status, vitality_, social aspects_, emotional aspects, mental health, and a question that evaluate the difference between the current health status and the status one year prior. Poor quality of life level was measured if the total score percentage was below (60%), fair quality of life if the total

score percentage was in the range of (60-70%) and good quality_ of life if the total score percentage was above (70%).

Administrative and ethical Methods

-We Obtained approvals and Official permission to conduct the study from the administration of the health affairs of Minia Governorate. The collection of the data continued during a period of 9 months starting from the beginning of January 2017 to the end of September 2017.

Verbal consent_ was obtained from the hypertensive patients to participate in the study after informing them about the purpose of the study and the confidentiality of all the information taken in the study.

Pilot study

A pilot study was done on 40 hypertensive patients to_ test the clearness, relevance, and reliability of the tools. We excluded the_ pilot study data from the final sample.

Statistical analysis

The data were_ collected, organized, tabulated and analyzed statistically by using Statistical Package of Social Studies (SPSS) version 19. The range, mean and standard deviation were calculated for numerical data. Student's t-test was used to test differences between mean values between the two different groups. We calculated the association between two variables by Pearson's correlation coefficient (r). The number and percentage were calculated for categorical variables. Chi-square test (X2) was used to analyze the differences between categories of each variable. Also, Fisher exact test was used as a test of significance. The significance level was established at ($p < 0.05$).

Limitations of the study:

The financial resources were scarce because there was no financial support from anyone. Administrative approvals were not so easy and time-consuming. The data collection process is done in a very crowded busy area in Kalandol rural health unit and Mallawy hospital outpatient clinics distracting the attention and consuming more time. This is not a community-based study and we should be cautious when we want to generalize these results to the community. Thus, larger national community-based studies are needed.

Results

The Table (1) shown the dissemination of studied hypertensive patients conferring to their health knowledge about hypertension. it shown that the highest percentage of the rural and urban sample had deficiency of health knowledge about hypertension concerning the value of high blood pressure (49.3%), (44.7%) correspondingly, the reason (62.7%), (72%) correspondingly ,controllable or not (69.3%), (70%) correspondingly, treatment continuance (58%), (81.3%) correspondingly and influence of weight reduction on hypertension (58.7%), (68%) respectively.

As concerning the hypertension manifestation, in the rural sample less than half can recognize only two out of six manifestations which were (49.3%) for blurred vision and (45.3%) for headache although (92%) of the urban sample were able to define blurred vision and (76.7%) define dyspnea as manifestations of hypertension. About (58%) of rural patients and (81.3%) of urban patients don't recognize if antihypertensive drugs can be stopped or not with a significant difference (P=0.001). Then again (58.7%) and (68%) of rural and urban samples don't know if weight reduction helps in hypertension control and there was no statistically significant difference (P=0.184).

In relation to the level of compliance with hypertension management, rural patients were more compliant with treatment than urban patients. Nearly, (52.7%) of urban subjects had a fair level of compliance with the treatment regimen, and (28%) had poor level of compliance with the hypertension treatment regimen and (19.3%) had good level of compliance with hypertension treatment regimen. Alternatively, (53.3%) of the rural patients had good level of compliance with treatment regimen, (30%) had fair level of compliance with the hypertension treatment regimen and (16.7%) of them had poor level of compliance with hypertension treatment regimen. A difference between_ the two groups was significant (P=0.001)

The relation between_ the compliance level and socio-demographic characteristic is shown in **Table (2)** the uppermost proportion of the total sample (rural and urban) had a fair level of

compliance with hypertension treatment regimen in relation to the socio-demographic characteristic. About (40%) of the patients was (30 to less than 35) years old, males, working, had intermediate education, had (3-5) members of their family size, had enough monthly income and with illness duration 10 years or more (58.8%), (50%), (46.4%), (46%) (43.5%), (48.1%) correspondingly. We found statistically significant differences related to age, sex, occupation, education, family size, monthly income, and the disease duration.

It was found that the fair quality of life of both rural and urban patients was (65.3%) and (66.7%) correspondingly; whereas (24%) of urban patients had a good quality of life compared to only (13.4%) of rural patients. The minor proportion of rural and urban patients had poor quality of life (21.3%) and (9.3%) in that order. A significant difference_ between the_ two groups was found as related to residence (P= 0.003). Almost the whole studied sample had poor scores regarding physical function, role limitation due to physical function, and role limitation due to emotional problems. As concern, 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%) in that order. Alternatively, (62.3%) of the studied patients had fair score concerning mental health and (65%) of studied patients had fair score concerning to vitality, energy or fatigue.

Table (3) displays the relation between the quality of life and socio-demographic characteristics and shows that the high percentage of the studied patients had a fair quality of life in relation to socio-demographic characteristics. Above (70%) of them aged (30 - 35) years old, are males, working, with high education ,had family size of two members and had enough income per month (70.6%), (73.2%), (75.2%), (74.5%), (71.5%), (71.8%) respectively. A statistically significant differences in relation to sex ,occupation, family size , income per month and residence was found.

Table (4) showed the correlation between compliance level, quality of life, age and disease duration in years. It was established that the quality of life is negatively correlated significantly in relation to compliance with the hypertension management regimen (r=-0.156). There was no significant_ correlation among age of the studied patients' sample and their compliance with hypertension management regimen and quality of life (r = -0.005 and -0.048), respectively. Also, no significant correlation among duration of disease in years among the studied hypertensive patients and their compliance with treatment and quality of life (r = 0.023 and -0.050), respectively.

Table (1): Studied subjects' distribution according to their knowledge about hypertension in hypertensive patients in Mallawy center Minia governorate from the beginning of January 2017 to the end of September 2017.

Variables	Rural		Urban		X2	P
	N	%	N	%	0.968	0.616
High blood pressure						
140/90	80	26.6	80	26.6		
160/100	72	24	86	28.7		
Don't know	148	49.3	134	44.7		
Reasons for hypertension:						
No reason	26	8.7	12	4	2.753	0.097
Kidney disease	20	6.7	14	4.7	0.651	0.454
Liver disease	16	5.3	48	16	8.955	0.003
heart disease	32	10.7	48	16	1.846	0.174
All of the above diseases	24	8	2	0.7	9.927	0.002
Don't know	188	62.7	216	72	2.970	0.085
Manifestations of hypertension						
Blurred vision	148	49.3	276	92	65.866	0.001
Headache	136	45.3	156	52	1.334	0.248
Coma	10	3.3	8	2.7	FE	1.000
Dyspnea	98	32.9	230	76.7	57.855	0.001
Chest pain	10	3.3	2	0.7	FE	0.214
Nausea	18	6	4	1.3	4.624	0.032
Vomiting	16	5.3	4	1.3	3.724	0.054
All of the above	38	12.7	2	0.7	17.357	0.001
None	4	1.3	2	0.7	FE	0.624
Don't know	72	24	2	0.7	37.766	0.001
Hypertension can be controlled:					MCET	0.353
Yes	80	26.7	86	28.7		
No	12	4	4	1.3		
Don't know	208	69.3	210	70		
Reduce weight control hypertension					3.385	0.184
Yes	108	36	88	29.3		
No	16	5.3	8	2.7		
Don't know	176	58.7	204	68		
Can stop antihypertensive treatment:					24.722	0.001
Yes	54	18	40	13.3		
No	72	24	16	5.4		
Don't know	174	58	244	81.3		
Hypertension may show no manifestations					9.909	0.007
Yes	46	15.3	90	30		
No	60	20	40	13.3		
Don't know	194	64.7	170	56.7		

Table (2): Relation between socio-demographic characteristics of studied groups and level of compliance in hypertensive patients in Mallawy center Minia governorate from the beginning of January 2017 to the end of September 2017..

Variable	Level of compliance						P-value
	Poor		Fair		Good		
	No.	%	No.	%	No.	%	
Age in years:							0.004
30-	14	20.6	40	58.8	14	20.6	
35-	18	12.9	80	57.1	42	30	
40-	24	23.5	40	39.2	38	37.3	
45-50	78	26.9	88	30.3	124	42.8	
sex:							0.001
Males	40	14.5	138	50	98	35.5	
Females	94	29	110	34	120	37	
occupation:							0.067
Working	58	22.5	124	48.1	76	29.5	
Not working	76	22.2	124	36.3	142	41.5	
Education:							0.001
Illiterate	22	9.7	96	42.5	108	47.8	
Read & Write	32	20	64	40	64	40	
Intermediate	46	41.1	52	46.4	14	12.5	
High	34	33.3	36	35.3	32	31.4	
Family size:							0.001
2	0	0	4	14.3	24	85.7	
3-5	100	25	184	46	116	29	
More than 5	34	19.8	60	34.9	78	45.3	
Monthly income:							0.010
Enough and saving	40	39.2	38	37.3	24	23.5	
Enough	60	16.9	154	43.5	140	39.5	
Not enough	34	23.6	56	38.9	54	37.5	
Duration of illness:							0.005
1-	50	20.8	94	39.2	96	40	
5-	78	30.5	104	40.6	74	28.9	
10+	6	5.8	50	48.1	48	46.2	

Table (3): The socio-demographic characteristics of the studied groups and the relationship between it and the quality of life in hypertensive patients in Mallawy center Minia governorate from the beginning of January 2017 to the end of September 2017.

Variable	Level of quality of life						P-value
	Poor		Fair		Good		
	No	%	No	%	No	%	
Age in years:							0.256
30-	4	5.9	48	70.6	16	23.5	
35-	18	12.9	92	65.7	30	21.4	
40-	24	23.5	62	60.8	16	15.7	
45-50	46	15.9	194	66.9	50	17.2	
sex:							0.030
Males	38	13.8	202	73.2	36	13	
Females	54	16.7	194	59.9	76	23.5	
occupation:							0.007
Working	26	10.1	194	75.2	38	14.7	
Not working	66	19.3	202	59.1	74	21.6	
Education:							0.123
Illiterate	42	18.6	136	60.2	48	21.2	
Read & Write	28	17.4	110	68.8	22	13.8	
Intermediate	8	7.1	74	66.1	30	26.8	
High	14	13.7	76	74.5	12	11.8	
Family size:							0.033
2	6	21.4	20	71.5	2	7.1	
3-5	44	11	268	67	88	22	
More than 5	42	24.4	108	62.8	22	12.8	
Monthly income:							0.020
Enough and saving	18	17.6	70	68.7	14	13.7	
Enough	46	13	254	71.8	54	15.2	
Not enough	28	19.4	70	50	44	30.6	

Table (4): Correlation between compliance level & quality of life, and age and duration of disease in years of studied group in hypertensive patients in Mallawy center Minia governorate from the beginning of January 2017 to the end of September 2017.s.

variables	Compliance with 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		

Discussion

This study was prepared to determine_ the compliance of hypertensive patients with management regimen and its influence on their quality of life. Concerning the patients' health knowledge about hypertension, this study_ revealed that there was a lack of health knowledge about hypertension in the highest proportion of the rural and urban sample concerning the high blood pressure value, the cause, manifestations, treatment continuation and performance to keep normal level of blood pressure (table 1). This may be due to that the majority of the study sample were illiterate or just read and write, and this goes along with Abd-ELaziz et al., who stated that there were mistaken beliefs related to the normal level of blood pressure, manifestations of hypertension, causes, and actions keeping blood pressure normal[24]. Muhlauser et al., have stated that

health-promoting knowledge was not only enough for attaining compliance but also optimistic attitude and behavior are necessary[25],. This was in agreement with our study results as we found no significant relationship between knowledge and compliance. This result is confirmed by Pascucci et al., who stated that the association between knowledge and compliance is confused because knowledge is not enough_ to ensure compliance[25].

The educational health knowledge is beneficial for the motivated patients _ to follow the management but unlearned in the regimen process, while unmotivated patients for compliance and already knowledgeable are unlikely to improve with further educational health knowledge (Becker, et al., [26]. Therefore, patient health education is important, while its efficacy may be quizzed, especially if there is a lack of motivation. Also Saleh, et al., stated no significant relationship between_ knowledge and compliance. Alternatively, this result is in dissimilarity with studies conducted by Soliman et al., Osterberg et al., and Mahday et al., who reported that compliance with the treatment regimen is significantly affected by knowledge[27-30].

Concerning patient's compliance with treatment, our study showed that (36.3%), (41.3%), (22.4%) were had good, fair and poor compliance with hypertension treatment regimen correspondingly and this is can be due to free medical treatment. This result was in agreement with a study conducted by Al-Ghanemy et al., who described good compliance with management among hypertensive patients and nearly equal with the study by AL-Dabbagh et al., who found that 54% of the patients were compliant to treatment[31,32]. Furthermore, this result opposed by the study done by Saleh, et al., who stated that compliance to treatment was not well followed by the majority of the sample of hypertensive patients[28]. The current study showed that compliance with management was significantly affected by age of the patient; which can be explained by that the sample was containing middle-aged patients. This finding was in accord with other studies that show that compliance with management affected by age of the patients[29,33-34]. In dissimilarity with studies conducted by Rask et al and Saleh et al who stated that there was no significant relation between compliance and age, this could be explained as their studies included only old age patients[28,35].

Our study presented_ a significant relationship between compliance with treatment and sex of hypertensive patients, and this may be understood as the majority of males had health insurance with monthly follow up visits and free drug obtaining, while most of female had no health insurance. These results are opposed by Salm et al., and Shafik H., et al., who found that no significant relationship between sex and compliance with treatment[36, 37].

The level of the patients' education had a_ significant influence on patients' compliance with treatment. The same finding was described by Shafik et al.,[37], as a high compliance rate was found among patients with a low education level. This may be due to that poor low educated people can be easily motivated to follow the treatment. This is in contrast with a study conducted by Mark et al.,[38].

In the current study, the high costs of multidrug therapy and low-income level decrease the patient compliance and there was_ a significant relationship between compliance and monthly income of the patients this result goes along with study done by EL-Zubier et al., who stated that the low income will certainly affect compliance[39]. This was not agreed by other studies accomplished in Alexandria who found that no significant relationship between compliance and the monthly income of the patients[28,36-37]. Regarding the Duration of the disease, the present study revealed no significant difference_ between the duration of the disease and compliance with the treatment regimen. This is in accordance with a study conducted by Abed El-hamid, et al., described that the duration of the disease had no significant effect on patient compliance[40]. In reverse to this finding Prattz et al stated that a prolonged disease duration correlates with decreased patients' compliance to treatment[41].

Our study established that hypertensive patients presented fair HRQOL scores in SF-36. This result is in concomitants with Gusmao JL et al., who showed that a special care program

for hypertensive patients reduced blood pressure and control it without changing the HRQL_ [42]. Hypertensive patients with high distress levels and complications have a poor quality of life compared to non complicated cases of hypertension. On the other hand, the mental health aspects had the highest scores while the functional capacity and status of overall health aspects had the poorest HRQL scores in both_ rural and urban hypertensive patients. This may be_ due to the_ influence of hypertension_ on quality of life and also the hypertensive patients have a tendency to to a disease adaptation and better dealing with their disease, this is consistent with_ other studies (Bardage et al., Erickson et al., Wang et al., Poljicanin et al.,) which showed that hypertension was associated with alterations in HRQOL which may propose that hypertension is affecting the patient's life[43-46].

On the subject of the relationship between_ HRQL level and, socio-demographic characteristics. the existent study revealed that no significant relationship between age and quality of life but shown better HRQOL in younger hypertensive patients (30-35 years) this can be explained by that the health hazards may arise as a result of physiological and functional changes of the aging process, which can affect negatively the physical aspects and HRQOL. This consequence is in accord with Carvalho et al., who found superior HRQOL scores in younger hypertensive patients compared to older patients[47].

Regarding sex hypertensive males had better HRQOL than females this may be because men are more forbearing to chronic diseases, and fewer affected emotionally by it, this finding is compatible with Carvalho et al., who reported that females were associated with lower scores of HRQOL[47]. Moreover, the existent study showed that a significant relationship between work and quality of life, the working patient had superior HRQOL may be due to constant income,and stability of life and is in accord with Theodorou et al., who revealed that employee Patients, had better HRQOL scores[48]. Our study showed_ that the Patients with a higher level of education combined with higher HRQOL scores, this is because the level of education increases the capability to comprehend the information on the disease and compliance to treatment. This consequence is compatible with Carvalho et al., who stated that highly educated patients had higher SF-36 scale HRQOL scores[47]. Regarding the income, a significant relation was observed between Individuals with high monthly incomes and high HRQOL scores which can be explained by that the money is essential for daily needs of life and to afford medication, also providing a peaceful life in relation to the purchase of goods. This is concurring with Carvalho et al., who stated that patients with higher incomes had higher scores of HRQOL[47]. As regards residence the existing study found a significant relationship between residence and quality of life, patients who live in urban area have better HRQOL scores, which can be explained by that rural communities offer fewer chances for sharing in social activities, and to have access to transportation to other places, which sequentially limits the social participation and decreases the HRQOL, and this is Compatible with Tavares et al., who revealed that people who are living in rural area have lower HRQOL scores[49]. Concerning the association between patient compliance to treatment and HRQL the present study revealed that the quality of life is significantly and negatively correlated to patient compliance to treatment. This can be explained by that the patient compliance to treatment increased when hypertension is sever or with many complications. This is compatible with Saleem et al, who revealed that a weak negative correlation between patient compliance to treatment and HRQL[50].

Conclusion

The patient compliance to treatment of the study sample needs to be encouraged. About 65% of the studied patients were having fair or poor level of patient compliance to treatment. Socio-demographic characteristics affect patient compliance with treatment. The main contributing factors were age and duration of illness which negatively affect the quality of life especially regarding physical function, role limitation due to emotional harms and physical problems role limitation. The present study revealed a great need for hypertensive patients for more awareness about compliance and adherence to treatment and about the positive result of this.

Hypertension is a common chronic disease that can be controlled by suitable medication or implementing lifestyle modifications but, the

shortage of health knowledge about the disease consequences and the importance of following the long term drug regimens, decreased motivation to make some lifestyle changes may create difficulties to compliance behavior. The hypertensive patients health knowledge about hypertension and the adherence to antihypertensive drugs and the physicians devices about diet and lifestyle modifications had a great role in improvement of the patients quality of life.

Recommendations

1- Further field studies should be done in different Egyptian governorates and results can be compared and discussed thoroughly clearing the causes of poor adherance to treatment in hypertensive patients.

2- Conduction of planned health education programs in primary health care centers for hypertensive patients, about the hypertension complication and the importance of compliance to hypertension treatment.

3- Mass media Health education promotions about hypertension should be done through television, radio, and posters.

4- Moreover, a patient health education about a healthy lifestyle, family counseling and social support network should be enhanced in health promotion programs to increase hypertensive patients' compliance with treatment.

5- Additional National studies should be prepared for observing and checking compliance to outline more accurately the noncompliance in hypertensive patients to attain a positive effect on national health care cost.

Merits and values of the study

This study concealed a reasonable sample of hypertensive patients for 9 months at the busiest area in Kalandol rural health unit and Mallawy general hospital at Minia Governorate. There are no unsolved difficulties in collecting data also the nurse team and the patients were very cooperative.The internal medicine specialists and consultants in Mallawy general hospital and the primary health care physicians in Kalandol rural health unit were very supportive and express great commitment and were very interested in this study.

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Authors' contributions:

Khaled Hussein M. Eldessouki devised and designed the study, the main conceptual ideas and proof outline. He collected and processed the data, performed the analysis, drafted the manuscript and wrote the manuscript with support from Hesham Kamal Habeeb Keryakos. Yosria El-Sayed Hossein contributed to implementation and revision of the research .All authors discussed the results and commented on the manuscript.

Conflicts of interest:

The authors of this study declared that there are no conflicts of interest in this study.

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