

## Prevalence of Hypertension and Quality of Life among Hypertensive Patients in An Egyptian Village

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Received: October, 2016 Accepted: January, 2017

### Abstract

**Background:** Systemic Hypertension (SH) is a major cardiovascular risk factor with a high prevalence in almost all countries and is one of the leading risk factors for global mortality. It is estimated to have caused 7% of disease burden in 2010 and 9.4 million deaths. Studies have been conducted to illustrate the negative effect of systemic hypertension on health-related quality of life. **Objective:** To measure the prevalence of hypertension and its risk factors among residents of a village in Menoufia governorate and to describe the quality of life among the study population in the same village. **Method:** The study was a cross sectional design with multistage random sampling. Six hundred (600) people representing 10% of the population of Meet El Moze village in Menoufia governorate were included. The chosen households were visited where filling the questionnaires and the clinical examination was carried out. Household residents 18 years or older were recruited. **Results:** The results indicated that the prevalence of hypertension was 38.2% in Meet El Moze village a rural area in Egypt. Overweight and obesity were the most modifiable risk factors of hypertension. The quality of life was worsened among hypertensive patients. **Conclusion:** It is concluded that hypertension is prominent in rural areas and affects the quality of life of hypertensive patients.

**Keywords:** *Hypertension, prevalence, quality of life, rural.*

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### Introduction

Raised blood pressure is one of the leading risk factors for global mortality and is estimated to have caused 7% of disease burden in 2010 and 9.4 million deaths.<sup>1</sup> Raised blood pressure is a major cardiovascular risk factor. If left uncontrolled, hypertension causes stroke, myocardial infarction, cardiac failure, renal failure, dementia and blindness, causing human suffering and imposing severe financial and service burdens on health systems.<sup>2</sup> Hypertension is asymptomatic and is usually diagnosed incidentally or after major organ damage has occurred. Given the asymptomatic nature of hypertension, its detection is

usually incidental, and at times only occurs after significant complications have arisen.<sup>3</sup> The global prevalence of raised blood pressure (defined as systolic and/or diastolic blood pressure  $\geq 140/90$ mmHg) in adults aged 18 years and over was around 22% in 2014. The proportion of the world's population with high blood pressure or uncontrolled hypertension fell modestly between 1980 and 2010. However, because of population growth and ageing, the number of people with hypertension has risen over the years. In general, the prevalence of raised blood pressure was higher in low-income countries

compared to middle-income and high-income countries.<sup>2</sup> In Egypt, the Egyptian National Hypertension Project (NHP) was carried out in 1991 to provide an estimate of hypertension prevalence, awareness, treatment and control among Egyptians aged 25 and above and the prevalence was 26%. After that the Stepwise survey conducted in 2005-2006 reported the prevalence also 26%.<sup>4</sup> The prevalence increased in 2008 to become 35%, for Males 35.5% and females 34.5%.<sup>5</sup> Health Related Quality of Life (HRQOL) is defined as “a person’s perceived quality of life representing satisfaction in those areas of life likely to be affected by health status”.<sup>7</sup> The concept of HRQOL has been used by health care professionals to describe factors other than illness affecting human health and its status. These different health dimensions help healthcare professionals to understand patient perceptions of illness.<sup>8</sup> The development of chronic conditions with decreased life expectancy can be disturbing for the patients.<sup>9</sup> Healthy People 2000, 2010, and 2020 identified quality of life improvement as a central public health goal. HRQOL is related to both self-reported chronic diseases as hypertension, and their risk factors (body mass index, physical inactivity, and smoking status).<sup>10</sup> Measuring HRQOL can help determine the burden of preventable disease, injuries, and disabilities, and it can provide valuable new insights into the relationships between HRQOL and risk factors. Measuring HRQOL will help monitor progress in achieving the nation’s health objectives. Despite the difficulties with treatment adherence, advances in knowledge and evolution achieved in therapy have increased the life expectancy of the population.<sup>11</sup> The aim of the work is (1) to measure the prevalence of hypertension and its risk factors among residents of a village in Menoufia governorate. (2) To describe

the quality of life among the study population in the same village.

## Method

**Study setting and population:** This study is a cross sectional conducted in Meet El Moze village in Shebin El Kom, Menoufia, 90km northwest Cairo in delta. The research included six hundred people representing 10% of the population. Adults of both sexes aged 18 years or old were included in the study.

**Exclusion criteria:** All patients with severe illness, as liver cirrhosis or end stage renal failure, endocrine diseases, malformation of blood vessels and pregnant females were excluded from the study.

**Sampling:** The overall population is about ten thousand people and about six thousand people are aged 18 years or old. The research included six hundred people representing 10% of the population aged 18 years or old.

The researcher used multistage random sampling.

The sampling was done in three stages. In the first stage, the village was divided into four regions. Each region was divided into streets according to the size of each region.

The first region is the largest and consist of eight streets. The second regions consist of seven streets. The third and the fourth regions consist of six streets.

The second stage involved systematic random sampling of ten to fifteen households from each street of the four regions, for example the house number five then the house number ten and so on. The third stage involved visiting the chosen households where filling the questionnaires and the clinical examination for the subjects who meet the study’s inclusion criteria were carried out.

The researcher claimed another physician who was female to assist him in the clinical examination after training her. This is because of some cultural concerns

and traditions of most subjects who didn't allow a male researcher to examine the females.

All subjects were chosen according to the inclusion criteria.

The questionnaires were filled by the subjects with the help of the researcher if they were educated while they were filled totally by the researcher for illiterate subjects.

**Study tools:** 1: Blood pressure measurement: Blood pressure was measured using a mercury sphygmomanometer. A patient's blood pressure was taken while the patient is in a sitting position, from the right arm after the patient rested for at least 5 minutes before measurement. Three measurements of blood pressure on a single visit was taken at least 3 minutes apart, and the average of the 3 records was used for the computation of the results. The point at which the first korotkoff sound be heard was taken as systolic blood pressure, and the diastolic blood pressure was taken to the point at which the sound disappear according to WHO.<sup>12</sup> The resident considered the subject has hypertension if the systolic blood pressure is  $\geq 140$  mmHg or diastolic blood pressure  $\geq 90$  mmHg according to CDC.<sup>13</sup> The sphygmomanometer was calibrated before the beginning of the study. 2: Weight: Weight was measured while the participant is standing without shoes and wearing light clothing, using a digital weighing scale. The scale was placed on a flat and firm surface and was tested for repeatability of the measures. 3: Height: Height was measured with the participants standing without shoes, using a stadiometer while the patients are in an upright position. Body mass index was calculated according to the formula. Body mass index =  $(\text{Weight in Kilograms}) \div (\text{Height in meters})^2$  and interpreted as underweight (BMI < 18.5), healthy weight (18.5 - 24.9), overweight (25.0 - 29.9) and obese ( $\geq 30.0$ ).<sup>14</sup>

4: Waist hip ratio: Waist circumference was measured in centimeters midway between the lower costal margin and iliac crest during the end expiratory phase. Hip circumference will be measured in centimeters at the level of the greater trochanters. 5: The questionnaires: 1): General questionnaire: Designed by the researcher about food, personal history, socio demographic variables, family expenditure, occupation, disease history and duration as diabetes mellitus, smoking and data provided by clinical examination and anthropometric measurements. 2): COOP/WANCA charts: for assessment of quality of life by family practitioner. The COOP/WONCA charts measure six core aspects of functional status: physical fitness, feelings, daily activities, social activities, change in health and overall health. The instrument consists of six charts, referring to the above mentioned aspects of functioning. Each chart consists of a simple title, a question referring to the status of the patient and an ordinal five-point response scale illustrated with a simple drawing. The researcher used the Arabic version of the questionnaire.

#### **Ethical consideration:**

An ethical approval was obtained from the mayor of Meet El Moze village and a verbal informed consent was obtained from participants after a comprehensive explanation of the purpose and procedures of the study in simple Arabic languages. Patients incidentally found with life-threatening conditions during the survey referred to the emergency unit, and those with newly detected hypertension advised to start follow-up treatment at the hospital or nearby health facility.

#### **Results:**

A total of 600 subjects were included in this study, 346 (57.7%) males and (42.3%) 254 females. All subjects were 18 years or older. Most of the subjects

**Table (1): Distribution of socio demographic variables in the studied subjects: N=600**

Sociodemographic variables	No.	%
<b>Gender</b>		
- Male	346	57.7
- Female	254	42.3
<b>Age</b>		
- <30 years	220	36.7
- 30-	103	17.2
- 40-	87	14.5
- 50-	129	21.5
- 60>	61	10.2
<b>Marital status</b>		
- Single	110	18.3
- Married	437	72.8
- Divorced	4	0.7
- Widow	49	8.2
<b>Occupation</b>		
- Management jobs	71	11.8
- Professional jobs	172	28.6
- Technical jobs and skilled trades	20	3.4
- Intermediate jobs	112	18.7
- Labour jobs and others	225	37.5
<b>Educational level</b>		
- Illiterate	61	10.2
- Basic*	33	5.5
- Secondary	216	36.0
- High	290	48.3
<b>Smoking</b>		
- Non smokers	430	71.7
- Current Smokers	170	28.3
<b>Practice walking</b>		
- Regular walking	432	72.0
- No regular walking	168	28.0

were married, 72.8% and nearly half of the subjects are highly educated, 48.3%. And 28.3 of the study subjects were currently smoking. (Table 1)

Among all the subjects, 38.2% are having hypertension based on the classification of having SBP of  $\geq 140$  / DBP  $\geq 90$ . Also there is 16.2% of the patients with hypertension are undiagnosed and 10.4% of the patients diagnosed with

**Table (2): Distribution of hypertension in the studied subjects, Diagnosis, receiving treatment and control of blood pressure: N=600**

Hypertension and co morbidity:	No.	%
<b>Blood pressure</b>		
Normal	371	61.8
Hypertension	229	38.2
<b>Previous Diagnosis of hypertension (N=229)</b>		
Diagnosed	192	83.8
Undiagnosed	37	16.2
<b>Receiving medication (N=192)</b>		
Yes	172	89.6
No	20	10.4
<b>Control of hypertension (N=192)</b>		
Controlled	26	13.5
Uncontrolled	166	86.5
<b>Presence of Diabetes</b>		
No DM	150	65.5
DM	79	34.5

hypertension are not receiving medication.

There is only 13.5% of the patients diagnosed with hypertension are controlled and 86.5% of the patients are uncontrolled. (Table 2)

There is 67.5% of the studied rural residents are overweight, 16.2% have grade I obesity and 4.2% have grade II obesity. The overall percentage of overweight and obesity among studied sample is 87.7%. (Table 3)

Table 4 shows that 16.7% of the studied subjects were diabetics and 43 % have familial history of hypertension. And 94.8% of all subjects having history of high diet intake in diet.

There is a higher percentage of hypertension among obese subjects 54.5% compared to 34.1% among overweight and 33.3% among normal body mass index and the difference is statistically highly significant. (Table 5)

Also there is higher mean body mass index among cases with DM with hypertension compared to cases with

hypertension only and the difference is statistically significant. (Table 6)

**Table (3): Distribution of overweight and obesity in the studied subjects: N=600**

Overweight and obesity:	No.	%
Normal	72	12.0
Overweight	405	67.5
Obesity grade I	97	16.2
Obesity grade II	25	4.2
Obesity grade III	1	0.2

All the COOP/WONCA quality of life items are affected by hypertension and the most affected item is change in health. (Table 7)

Table 8 shows that all domains of the COOP/WONCA quality of life items among hypertensive subjects are affected more than those among non-hypertensive subjects and the difference is statistically highly significant.

It was found that there is higher mean scores of COOP/WONCA quality of life items among cases with disease duration of DM above 10 years and the difference is statistically highly significant only in physical fitness score. (Table 9)

**Table (4) Distribution of some risk factors for hypertension in the studied subjects: N=600**

Risk factors for hypertension:	No.	%
<b>History of high fat intake</b>		
No	31	5.2
Yes	569	94.8
<b>Familial history of hypertension</b>		
No	342	57.0
Yes	258	43.0
<b>History of Diabetes Mellitus</b>		
No	500	83.3
Yes	100	16.7

Table 10 shows that there is higher mean scores of COOP/WONCA quality of life items except social activities score among obese hypertensive subjects compared to normal or overweight subjects and the difference is statistically significant only in physical fitness score

and change in health score. Also Table 11 shows that the age and control of hypertension are independent risk factors of quality of life affection among hypertensive patients.

## Discussion:

In this study, the prevalence of hypertension among residents in a village in Menoufia governorate is measured and the quality of life of hypertensive subjects is assessed.

**Table (5): Comparison between body mass index and presence of hypertension in the studied subjects: N=600**

BMI	Hypertension	
	Negative No (%)	Positive No (%)
Normal (N=72)	48 (66.7)	24 (33.3)
Overweight (N=405)	267(65.9)	138(34.1)
Obesity (N=123)	56 (45.5)	67 (54.5)
	$X^2 = 17.0$	$P < 0.001^*$

\* $P < 0.001$  highly significant

In the current study, 38.2% of the studied subjects are having hypertension. This percentage is higher than another study conducted among rural population in Egypt in 2000 reported that 27.9% of the studied sample were hypertensives.<sup>15</sup>

High prevalence of hypertension in this study is probably attributable to lifestyle changes in rural areas over recent years, industrialization, urbanization, increasing economic development, modernization, market globalization. This have caused detrimental changes to diet and lifestyle.

**Table (6): Comparison between cases with hypertension only and cases with hypertension and DM as regards the mean body mass index: N=229**

BMI	Mean	SD
<b>Hypertension only</b> N=150	28.4	3.0
<b>Hypertension and DM</b> N=79	<b>29.7</b>	3.7
	t=2.4	P=0.01*

\* $P < 0.05$  significant

These, in turn, have resulted in increases in risk factors for hypertension such as being overweight or obese.<sup>16</sup>

**Table (7): Descriptive statistics of effect of HTN on the domains of COOP/WONCA quality of life items: N=229**

Effects of HTN on domains of COOP/WONCA quality of life Questionnaire:	No.	%
<b>Physical fitness</b>		
Not affected	21	9.2
Affected	208	90.8
<b>Feelings</b>		
Not affected	47	20.5
Affected	182	79.5
<b>Daily activity</b>		
Not affected	50	21.8
Affected	179	78.2
<b>Social activities</b>		
Not affected	54	23.6
Affected	175	76.4
<b>Change in health</b>		
Not affected	13	5.7
Affected	216	94.3
<b>Overall health</b>		
Not affected	89	38.9
Affected	140	61.1

The participants in this rural village became more likely similar to those in urban areas in the habits and traditions.

There is 10.4% of the patients diagnosed with hypertension don't receive antihypertensive treatment while 16.2% of the patients with hypertension are undiagnosed. There is only 13.5% of the patients diagnosed with hypertension are controlled and 86.5% of the patients are uncontrolled.

As regards these results the Egyptian National Hypertension Project (NHP) that was carried out in 1991 to provide an estimate of hypertension prevalence, awareness, treatment and control among Egyptians aged 25 and above, the prevalence was 26%.<sup>17</sup>

After that the Stepwise survey conducted in 2005-2006 reported the prevalence also 26%.<sup>4</sup> The prevalence increased in 2008 to become 35%, for Males 35.5%

and females 34.5%.<sup>5</sup> The prevalence of hypertension in Egypt according to stepwise survey in 2011/2012 is as follow: Percentage with raised BP (SBP  $\geq$  140 and/or DBP  $\geq$  90 mmHg or currently on medication for raised BP) males 38.7%, females 40.8% and both sexes 39.7%. Percentage with raised BP (SBP  $\geq$  140 and/or DBP  $\geq$  90 mmHg) who are not currently on medication for raised BP males 40.9% , females 37.9 and both sexes 39.5%.<sup>6</sup>

Overall, the rates of awareness, treatment and control had improved greatly in the period from the early 1990s.<sup>18</sup> Improvements in the awareness, treatment and control rates of hypertension have been documented in many parts of the world over the past twenty years.<sup>19</sup>

The rate of awareness of hypertension in the Egyptian population (53.3%) is lower than that in the US (69.3%), and Canada (63.2%).<sup>20</sup>

Obesity is associated with an increased incidence of hypertension. Greenlund et al.,<sup>21</sup> demonstrated a relationship between pre-hypertension and both overweight and obesity using data from the National Health and Nutrition Examination Survey, concluding that early clinical detection of pre-hypertension and early intervention could be triggered by elevated body mass index instead of waiting for blood pressures to become elevated.

Meanwhile, obesity has already been shown to play an important role for hypertension and cardiovascular disease<sup>22</sup>. Overweight and obesity are important predictors of hypertension; and had more high mean systolic and diastolic blood pressure than normal weight people in both sexes.<sup>23</sup> In this study, 67.5% of the studied rural residents are overweight, 16.2% have grade 1 obesity and 4.2% have grade 2 obesity. The overall percentage of

**Table (8): Comparison between hypertensive and non-hypertensive subjects as regards the effect on COOP/WONCA quality of life items: Affection of the domains of quality of life**

Effects of HTN on domains of COOP/WONCA quality of life Questionnaire:	Hypertensive N=229 No (%)	Non hypertensive N=371 No (%)	X <sup>2</sup>	P	OR 95% CI
Physical fitness >2	208 (90.8)	182 (49.1)	108.6	<0.001*	10.2 (6.2-16.8)
Feelings >2	182 (79.5)	128 (34.5)	114.6	<0.001*	7.3 (4.9-10.8)
Daily activity >2	179 (78.2)	109 (29.4)	135.0	<0.001*	8.6 (5.8-12.6)
Social activities >2	175 (76.4)	110 (29.6)	124.2	<0.001*	7.6 (5.2-11.2)
Change in health >2	216 (94.3)	271 (73.0)	41.9	<0.001*	6.1 (3.3-11.2)
Overall health >2	140 (61.1)	36 (9.7)	180.1	<0.001*	14.5 (9.4-22.5)

\**P*<0.0005 highly significant

overweight and obesity among studied sample is 87.7%.

The prevalence of obesity and overweight in Egypt in 2008 was 33.1% and 67.9% respectively.<sup>5</sup> This percentage was near to that of the steps survey in Egypt in 2011/2012 that was 31.3% for obesity and 62.2% for overweight.<sup>6</sup>

In the current study, there is higher percentage hypertension among obese objects 54.5% compared to 34% and 33.3% among overweight and normal body mass index respectively and the difference is statistically highly significant. The odds ratio of having hypertension among obese subjects is 2.32 compared to normal or over weight subjects and this indicates that obesity is an important risk factor of hypertension.

Obesity was also independent risk factor for development of hypertension. This comes in agreement with a study done in four Egyptian governorates and reported that waist circumference is an independent risk factor for hypertension. The latter study reported the odds ratio for the 90th percentile versus the 10th percentile of WC was 6.6 in multivariate analysis.<sup>24</sup>

Hypertension has been identified as a major risk factor for the development of diabetes. Patients with hypertension are at a 2-3 times higher risk of developing diabetes than patients with normal blood pressure.<sup>25</sup> It was observed that prehypertension increased with subjects having glucose intolerance, while hypertension was found most with those

**Table (9): Comparison between duration of DM among hypertensive subjects as regards the mean scores of COOP/WONCA quality of life items: Years of duration of diabetes mellitus. (Median is 10 years)**

Domains of COOP/WONCA quality of life Questionnaire:	≤10 ys N=82 Mean ± SD	>10 ys N=68 Mean ± SD	t	P
Physical fitness	3.5 ± 1.2	4.1 ± 0.8	3.3	<0.001**
Feelings	3.3 ± 1.1	3.6 ± 1.1	1.5	0.1
Daily activity	3.0 ± 1.2	3.5 ± 1.2	2.0	0.04*
Social activities	2.6 ± 1.4	3.0 ± 1.3	1.4	0.1
Change in health	3.1 ± 0.8	3.2 ± 0.8	0.7	0.4
Overall health	3.9 ± 0.6	4.0 ± 0.5	1.5	0.1

\* *P*<0.05 significant

\*\* *P*<0.0005 highly significant

suffering from diabetes in both sexes. (26) The rate of hypertension in patients with type 2- diabetes is approximately twofold higher than in age matched subjects without the disease.<sup>25</sup>

This could be observed also in the results of this study as it was noticed that 16.7% of the studied subjects have diabetes mellitus and 34.5% of the diabetic patients have hypertension.

**Table (10): Effect of obesity with hypertension and the Quality of life of the studied patients, mean scores of COOP/WONCA quality of life items:**

Effects of obesity with HTN on domains of COOP/WONCA quality of life Questionnaire:	Normal or overweight N =162 Mean ± SD	Obese N = 67 Mean ± SD	t	P
Physical fitness	3.4 ± 0.8	3.7 ± 0.9	2.3	0.02*
Feelings	3.3 ± 1.1	3.4 ± 1.3	0.04	0.9
Daily activity	3.2 ± 1.0	3.4 ± 1.2	0.8	0.3
Social activities	3.3 ± 1.1	3.2 ± 1.3	0.4	0.6
Change in health	3.1 ± 0.5	3.4 ± 0.8	2.3	0.02*
Overall health	3.6 ± 0.8	3.8 ± 1.0	0.9	0.3

\* $P < 0.05$  significant

This is highly significant indicating that there is strong correlation between diabetes mellitus and hypertension.

The rate of hypertension in diabetic patients is approximately 8.7 times higher than in non-diabetics.

There is higher mean body mass index among cases with diabetes mellitus 29.7% compared to 28.3% among cases with hypertension only, and the difference is statistically significant.

Also in the current study, there is 43% of the studied subjects have familial history of hypertension.

**Table (11): Logistic regression model of risk factors in cases with hypertension and affection of Quality of life COOP WONCA questionnaire:**

Risk factors and control of hypertension:	P	OR	CI
Comorbid condition	0.5	1.3	0.5-3.5
Age	0.02*	2.7	1.1-6.5
Economic status	0.1	1.8	0.7-4.4
Obesity	0.7	0.8	0.3-2.0
Control of hypertension	0.001**	4.4	1.7-11.4

\* $P < 0.05$  significant \*\* $P < 0.01$  highly significant

There is higher percentage of hypertension among cases with positive familial history 61.6% compared to 20.5% among cases with negative family history and the odds ratio is 6.24 with a statistically highly significant difference.

In our study, an attempt has been made to find out the association between different

risk factors with hypertension by logistic regression analysis.

Logistic regression analysis was conducted with reporting of odds ratio to establish the risk for hypertension.

The researcher noticed that age, education (illiteracy), obesity, presence of diabetes mellitus, profession and marital status are all independent risk factors for the presence of hypertension the studied subjects.

Vast majority of cases of uncontrolled hypertension are amongst individuals more than 60 years of age.<sup>27</sup>

Prevalence of hypertension increases with increasing age. Similarly a health survey in England 2003<sup>28</sup> and in the United States reported strong correlation between age and blood pressure.

Obesity is a well-established risk factor for hypertension.<sup>29</sup>

In this study, the prevalence of hypertension increased with increasing BMI. In the Ansan Study conducted in Korea, BMI and abdominal circumference was found to be a risk factor for hypertension.<sup>30</sup>

Population studies have also shown that blood pressure correlates with body mass index (BMI) and other anthropometric indices of obesity such as waist-hip ratio. In the Framingham Study, 70% of new cases of hypertension were related to excess body fat.<sup>31</sup>

Quality of life rating is subjective and relative to the person's life expectation. It has been found that successful



adjustment has a positive effect on patients' perceived HRQOL.<sup>32</sup>

A number of studies have reported significant reduction in HRQOL with hypertension.<sup>33</sup>

The descriptive statistics of affection of the domains of COOP/WONCA quality of life items among hypertensive patients showed that the most affected domain is change in health 94.3% then the physical fitness 90.8%.

As regards the mean scores of COOP/WONCA quality of life items between hypertensive and non-hypertensive subjects, there is higher mean score in physical fitness, in feeling score, in daily activities and in social activities score.

Also there is higher mean score of overall health (worse score) and the odds ratio is 14.5 means that this domain is affected more than fourteen times more in hypertensive than in non-hypertensive subjects.

Diabetes mellitus has an impact on health related quality of life among hypertensive patients. Grauw et al.,<sup>34</sup> showed that diabetes mellitus was associated with worse ratings in both physical fitness and overall health domains.

As regards years of duration of diabetes mellitus (Median is 10 years), there is higher mean scores of all the domains among cases with disease duration above 10 years especially the physical fitness score (worse score) and the difference is statistically highly significant.

Also there is affection of all the domains of the COOP/WONCA questionnaire in obese patients with hypertension compared to normal or overweight hypertensive patients. This was in accordance with other study in the United States of America reported lower quality of life among obese patients. (35)

The hypertension is considered controlled if systolic blood pressure is < 140 and diastolic blood pressure is < 90. There is higher mean scores of all the

domains among cases with uncontrolled hypertension compared to controlled patients.

The low rate of control has been related to low adherence to treatment, which could be associated with worsened quality of life and perception of general health conditions and high incidence of adverse effects of blood-pressure-lowering drugs.<sup>36</sup> Also Mena-Martin et al.,<sup>37</sup> showed that the HRQOL of hypertensives improve when control of blood pressure is achieved.

Comorbidity caused great impairment on HRQOL, and the association was additive. Therefore, it is important to consider comorbidity when evaluating HRQOL among hypertensive subjects, and the prevention and treatment of comorbidity of hypertension may prevent further deterioration in HRQOL. (38)

Multivariate analysis was done for risk factors among hypertensives and affection of the quality of life COOP/WONCA.

Multivariate analysis showed that age and control of hypertension are independent risk factors for the affection of quality of life among hypertensive patients.

In a study conducted in the United States of America in 2001, treated hypertensive patients reported more symptoms and related distress, as well as lower physical and social but not emotional HQL domains, as compared to normal controls. Also observed was that treated hypertensive patients whose systolic and/or diastolic blood pressures were over 140/90 mm Hg reported more symptoms and lower HQL than treated hypertensive patients whose blood pressure was controlled.<sup>39</sup>

In a study done in Rural Vietnam, a conclusion was made that encouraging of physical activity and strengthening adherence to treatment would improve quality of life of hypertensive patients.<sup>40</sup>

## Conclusion:

Hypertension is an important health problem accounting for about 38.2% in the studied village in rural Egypt.

The patients diagnosed with hypertension (10.4%) aren't receiving their antihypertensive medication while 16.2% of the patients with hypertension are undiagnosed. There is only 13.5% of the patients diagnosed with hypertension are controlled and 86.5% of the patients are uncontrolled. The most independent risk factors of hypertension was overweight, obesity and smoking. Respondents with hypertension experienced lowering of HRQOL compared with those without hypertension. Comorbidity in subjects with hypertension led to further lowering of HRQOL. Furthermore, researchers and health care providers should work to uncover the burden of hypertension overall.

## Recommendations:

Improving diet and lifestyle is a critical component for obesity and overweight risk reduction and hence hypertension risk reduction in the general population in Egypt. Also mass health education programs should be urgently implemented to encourage the Egyptian population to adopt healthy lifestyles emphasizing a healthy diet and regular exercise. Screening and clinical guidelines should be implemented to improve awareness, treatment and control rates, and physicians should be trained to counsel their patients on lifestyle modification.

The findings of this study indicate the necessity for health professionals to pay more attention to patients' quality of life, seeking changes in the therapeutic approach of hypertension in general.

## Limitations:

The results of this study could not be generalized on rural Egypt as the data was collected from only one village. Social relationship of the researcher with

the subjects in Meet El Moze village facilitated the work.

The study utilized cross-sectional design and this do not allow causality to be attributed to the observed associations, since they analyze both outcome and exposure, which can be one of the limitations of this study. However, the findings are relevant for providing better knowledge and understanding effect of hypertension on quality of life.

## References:

1. Lim SS, Vos T, Flaxman AD, Danaei G, Shibuya K, Adair-Rohani H et al. (2012): A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990–2010: a systematic analysis for the Global.
2. WHO. (2013): High blood pressure and the role of primary health care. Available at [http://apps.who.int/iris/bitstream/10665/113239/1/Fact\\_Sheet\\_WHD\\_2013\\_EN\\_14867.pdf?ua=1](http://apps.who.int/iris/bitstream/10665/113239/1/Fact_Sheet_WHD_2013_EN_14867.pdf?ua=1). accessed 20 April 2016.
3. WHO. (2002): The World Health Report 2002: Reducing Risks, Promoting Healthy Life. Geneva, Switzerland: World Health Organization.
4. Ellabany E, Ahmed M. (2010): Community based survey study on noncommunicable diseases and their risk factors, Egypt, 2005- 2006. Epidemiology and Surveillance Unit (ESU), Ministry of Health and Population (MOH& P), Egypt in collaboration with the World Health Organization. Downloaded on 7/11/from [http://www.emro.who.int/ncd/pdf/stepwise\\_egypt\\_05\\_06.pdf](http://www.emro.who.int/ncd/pdf/stepwise_egypt_05_06.pdf).
5. WHO. (2011): noncommunicable diseases country profiles 2011. WHO global report. Available at [http://www.who.int/nmh/publications/ncd\\_profiles2011/en/](http://www.who.int/nmh/publications/ncd_profiles2011/en/) accessed April 2016.
6. WHO. (2012): Egypt STEPS survey 2011-2012 fact sheet. Available at <http://www.who.int/chp/steps/en/>.

7. Bredow T, Peterson S, Sandau K. Health-related quality of life. (2008): In: Peterson S. ed. *Middle-range Theory: Application to Nursing Research*. 2nd ed. Philadelphia, PA: Lippincott Williams & Wilkins; 273-289.
8. Saleem F, Hassali MA, Shafie AA. (2012): A cross-sectional assessment of health-related quality of life (HRQoL) among hypertensive patients in Pakistan. *Health Expect*. DOI: 10.1111/j.1369-7625.00765.x
9. Kwok WY, Vliet Vlieland TPM, Rosendaal FR, Huizinga TWJ, Kloppenburg M. (2010): Limitations in daily activities are the major determinant of reduced health-related quality of life in patients with hand osteoarthritis. *Ann Rheum Dis*. Nov 15; 70:334-6.
10. CDC. (2011): health related quality of life (HRQOL).available at <http://www.cdc.gov/hrqol/concept.htm>. accessed 20 April 2016.
11. Pereira JC, Barreto SM, Passos VM. (2008): O perfil de saúde dos idosos brasileiros precisa melhorar: estudo de base populacional. *Arq Bras Cardiol*. 91(1):1-10.
12. WHO. (1996): World Health Organization's Quality of Life group. WHOQOLBREF Introduction, Administration and Scoring, Field Trial version.
13. CDC. (2014): centers for disease control and prevention: Conditions That Increase Risk for High Blood Pressure. Available at <http://www.cdc.gov/bloodpressure/conditions.htm>. Accessed in July 2014.
14. CDC. (2012): centers for disease control and prevention: Vital Signs: Awareness and Treatment of Uncontrolled Hypertension among Adults—United States, 2003–2010. *MMWR*; 61(35); 703-709.
15. Mohamed M, Shafek M, El Damaty S, Seoudi S. (2000): Hypertension control indicators among rural population in Egypt. *J Egypt Public Health Assoc*. 75(5-6):391-401. Available at <http://www.ncbi.nlm.nih.gov/pubmed/17219881>
16. Arafa N. A. S. and Ez-Elarab H. S. (2011): Epidemiology of Prehypertension and Hypertension among Egyptian Adults. *The Egyptian Journal of Community Medicine* Vol.29 No. 1.
17. Ashour Z., Mohsen M., Lawrence J., Appel, Amal Sami Ibrahim, Paul K. Whelton. (1995): The Egyptian National Hypertension Project (NHP) Design and Rationale. *Hypertension*; 26: 880-885. Available at <http://hyper.ahajournals.org/content/26/6/880.full>. Accessed April 2015.
18. Ibrahim MM, Rizk H, Appel LJ, et al. (1995): Hypertension prevalence, awareness, treatment, and control in Egypt. Results from the Egyptian National Hypertension Project (NHP). NHP Investigative Team. *Hypertension*. 26:886-90.
19. Lee K. (2010): Cardiovascular risk prevalence, awareness, treatment, and control from 1998 to 2007 in Koreans. *Asia Pac J Clin Nutr*. 19(2):261-5.
20. Wolf-Maier K, Cooper RS, Banegas JR, et al. (2003): Hypertension and blood pressure levels in 6 European countries, Canada, and the US. *JAMA*.289:2363–2369.
21. Greenlund, K.J., J.B. Croft and G.A. Mensah. (2004): Prevalence of heart disease and stroke risk factors in persons with prehypertension in the United States, 1999-2000. *Archives of Internal Medicine*, 164(19): 2113-2118.
22. Feng, R.N., C. Zhao, C. Wang, Y.C. Niu, K.Li, F.C.Guo, S.T. Li, C.H. Sun and Y. Li. (2012): BMI is Strongly Associated with Hypertension, and Waist Circumference is Strongly Associated with Type 2 Diabetes and Dyslipidemia, in Northern Chinese Adults. *J Epidemiol*, 22(4): 317-323.
23. Jerant, A. and P. Franks. (2012): Body Mass Index, Diabetes, Hypertension, and Short-Term Mortality: A Population-Based Observational

Study, 2000–2006. *J Am Board Fam Med.*, 25: 422-431.

24. Abolfotouh M.A, Soliman L.A, Mansour E, Farghaly M and El-Dawaiaty A.A. (2008): Central obesity among adults in Egypt: prevalence and associated morbidity. Available at <http://www.emro.who.int/emhj-volume-14-2008/volume-14-issue-1/article6.html>

25. Grossman, E. and F. Messerli. (2008): Hypertension and Diabetes. Fisman EZ, Tenenbaum A (eds): Cardiovascular Diabetology: Clinical, Metabolic and Inflammatory Facets. *Adv Cardiol. Basel, Karger*, 45: 82106.

26. El-Din A. M. S, Erfan M, Kandeel W. A, Kamal S, El Banna A. R and Fouad W. A. (2012): Prevalence of Pre-hypertension and Hypertension in a sample of Egyptian Adults and its Relation to Obesity. *Australian Journal of Basic and Applied Sciences*, 6(13): 481-489.

27. Thomas JW and Ramachandran SV. (2005): Epidemiology of Uncontrolled Hypertension in the United States. *Circulation* 2005; 112: 1651- 1662.

28. Primatesta P and Poulter NR. (2003): Improvement in Hypertension Management in England: Results from the Health Survey for England 2003. *Journal of Hypertension* 2006; 24(6):1187-92.

29.

30. Rankinen T, Church TS, Rice T, Bouchard C, Blair SN. (2007): Cardiorespiratory Fitness, BMI, and Risk of Hypertension: The HYPGENE Study. *Medicine & Science in Sports and Exercise*; 39(10):1687-92.

31. Jo I, Ahn Y, Lee J, Shin KR, Lee HK, Shin C. (2001): Prevalence, Awareness, Treatment, Control and Risk Factors of Hypertension in Korea: the Ansan Study. *Journal of Hypertension*; 9:1523-1532.

32. Kotsis V, Stabouli S, Bouldin M, Low A, Toumanidis S, Zakopoulos N. (2005): Impact of Obesity on 24-Hour

Ambulatory Blood Pressure and Hypertension. *Hypertension*; 45:602-607.

33. Alison PJ, Locker D, Feine JS. (1997): Quality of life: a dynamic construct. *Soc Sci Med*; 45: 221–230.

34. Soni RK, Weisbord SD, Unruh ML. Health-related quality of life outcomes in chronic kidney disease. (2010): *Curr Opin Nephrol Hypertens.* Mar; 19(2):153-9.

35. Grauw WJC, Van de Lisdonk EH, Behr RRA, Van Gerwen WHEM, Van den Hoogen HJM, Van Weel C. (1999): The impact of type 2 diabetes mellitus on daily functioning. *Fam Pract*; 16: 133–139.

36. Wang J, Susan M. Sereika, Mindi A. Styn, Lora E. Burke, FAAN, FAHA. (2013): Factors Associated with Health-Related Quality of Life among Overweight or Obese Adults. *J Clin Nurs.* 2013 August; 22(0): 2172–2182. doi:10.1111/jocn.12280.

37. Jayasinghe J. (2009): Nonadherence in the hypertensive patient: can nursing play a role in assessing and improving compliance? *Can J Cardiovasc Nurs*; 19:7–12.

38. Mena-Martin FJ, Martin-Escudero JC, Simal-Blanco F, Carretero-Ares JL, Arzua-Mouronte D, Herreros-Fernandez V. (2003): Health-related quality of life of subjects with known and unknown hypertension: results from the population-based Hortega study. *J Hypertens*; 21:1283–1289.

39. Wang R, Zhao Y, Heb X, Maa, X, Yana, Sun a Y, Liuc W, Guc Z, Zhao J, Hea J. (2009): Impact of hypertension on health-related quality of life in a population-based study in Shanghai, China. *Public Health* 123:534–539.

40. Gruppen LD, Erickson SR and Williams BC. (2001): Perceived symptoms and health-related quality of life reported by uncomplicated hypertensive patients compared to normal controls. *Journal of Human Hypertension* 15, 539–548.

41. Ha Ninh Thi, Hoa Thi Duy, Ninh Hoang Le, Vishnu Khanal and Rachael Moorin. (2014): Quality of life among people living with hypertension in a rural

Vietnam community. Available at <http://www.biomedcentral.com/1471-2458/14/833>. BMC Public Health, 14:833