

## Assessment of Quality of Care Provided to Hypertensive Patients in Primary Health Care Units in Ismailia City

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### Abstract

**Background:** Several studies examined the link between care processes and controlled hypertension (HTN). However, these studies may not serve as the best preface to the current state of quality of care in primary health care (PHC). Previous analyses often comprised regional rather than national data, probably restrict the generalizability of the results. Furthermore, no such researches were accomplished in Egypt. **Objective:** to assess the quality of care provided to hypertensive patients at PHC units in Ismailia city. **Method:** Seventy-two hypertensive patients regularly follow-up at PHC for >6 months were recruited into the study. Data was collected from (1) Care Performance measures, (2) Quality of Care indicators, (3) Patients' Satisfaction (patient's perspective about quality of care) by Arabic version of Client Perception of Coordination Questionnaire (CPCQ), and (4) Patients' characteristics. **Results:** The frequency of inadequate care performance was 56.9%. Only 5.6% of our patients were under health insurance coverage. The most common deficient indicator for quality of care was performing lifestyle modification (5.6%). Approximately 60% of the patients had uncontrolled HTN and 59.7% of the cases had positive perception about the care. The most common problems facing the patients were waiting too long till receiving the services (83.3%) and 23.6% of the studied patients didn't have any caregiver. Significant factors affecting care performance were health insurance coverage, degree of caregiver involvement and quality of care adequacy. **Conclusion:** Quality of care provided to hypertensive patients at the PHC in Ismailia City was inadequate.

**Keywords:** *Care performance, patients' satisfaction, client perception.*

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### Introduction

Globally cardiovascular disease accounts for approximately 17 million deaths a year, nearly one third of the total.<sup>1</sup> The 2017 American College of Cardiology/American Heart Association (ACC/AHA) Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults lowered the threshold for the definition of hypertension. The 2017 ACC/AHA guideline describes the condition as a systolic blood pressure (SBP) greater than or equal to 130 mm Hg or a diastolic blood pressure (DBP)

greater than or equal to 80 mm Hg.<sup>2</sup> Application of this revised definition may reclassify a significant proportion of people as hypertensive who were previously categorized as prehypertensive, or people with high normal blood pressure. The benefit of this would be to potentially catch individuals earlier in disease progression and reduce cardiovascular morbidity and mortality. A number of studies to date have estimated the adjusted prevalence of hypertension in some countries according to the new guideline.<sup>3,4</sup> Muntner et al

examined the effects of the new definition by assessing the hypertension prevalence in the United States and found an absolute increase of 14.7% among people aged 20 years or older. Additionally, Khera et al estimated the relative increase of prevalence among adults aged 45 to 75 years in the United States and China and found an overall relative increase of 45.1% and 26.8% in these 2 countries, respectively.<sup>3,4</sup>

The Chronic Care Model (CCM) is a well-established organizational framework for chronic care management and practice improvement.<sup>5,6</sup> There is a significant evidence base to support the effectiveness of the model.<sup>6,7</sup> In addition, the comprehensive, multisystem approach of the CCM makes it ideal for working with the vulnerable populations often seen in nurse practitioners (NPs) practices. The CCM consists of 6 distinct concepts identified as modifiable components of healthcare delivery: organizational support, clinical information systems, delivery system design, decision support, self-management support, and community resources.<sup>8,9</sup> It has been shown that lowering systolic BP (SBP) to 150 mm Hg decreases the incidence of all types of strokes.<sup>10</sup> Although treatment reduces mortality, morbidity and costs, nearly half of all people with HTN go untreated and only 23% control their BP to the recommended level.<sup>11</sup>

In previous studies, general measures of hypertensive quality were examined (including treatment, diagnosis, and follow-up indicators) and found that these care processes were associated with BP control in young women participating in a single health plan.<sup>12</sup> Studies of PHC patients conducted 10 years ago suggested that only about 50% of patients with HTN, and 40–60% of patients with diabetes, received appropriate care.<sup>13,14</sup> While informative, these studies may not serve as the best preface to the current state of clinical

quality in PHC. Previous analyses often included regional rather than national data, possibly limiting the generalizability of the findings.

Hypertension is a silent, invisible killer that rarely causes symptoms. Increasing public awareness is key, as is access to early detection. Raised blood pressure is a serious warning sign that significant lifestyle changes are urgently needed. People need to know why raised blood pressure is dangerous, and how to take steps to control. To raise this kind of awareness, countries need systems and services in place to promote universal health coverage and support healthy lifestyles: eating a balanced diet, reducing salt intake, avoiding harmful use of alcohol, getting regular exercise and shunning tobacco. Access to good quality medicines, which are effective and inexpensive, is also vital, particularly at the primary care level. As with other non-communicable diseases, awareness aids early detection while self-care helps ensure regular intake of medication, healthy behaviours and better control of the condition.

HTN is known to be a strong risk factor for stroke and coronary heart diseases. In spite of all these facts, a high percentage of victims are unaware that they have HTN, and those who are known to have HTN are not adequately controlled. In order to manage this common health problem adequately this study was to assess the quality of HTN care. It has been shown that lowering systolic BP (SBP) to 150 mm Hg decreases the incidence of all types of strokes.<sup>10</sup> Although treatment reduces mortality, morbidity and costs, nearly half of all people with HTN go untreated and only 23% control their BP to the recommended level.<sup>11</sup>

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**Method**

This cross-sectional study is designed to assess the quality of care provided to hypertensive at the urban PHC in Ismailia City, Egypt. Four PHCUs were included; Elshikh Zayed, Elsalam, Elshohdaa and Elsabah banat. Seventy two hypertensive patients from these four PHCUs (18 patients from every unit) were selected to assess the quality of the received care

The sample size was calculated according to the following equation:

$$n = 2 (Z_{\alpha} + Z_{\beta})^2 \times p \times q / (p^1 - p^2)^2$$

(1.96/0.1)2 X 0.263 x 0.637= 65 patients

Where n = number of patients, Z/D = the value of standard normal distribution for type I error probability for sided test and equals 1.96/0.1. q = 1- p.

Medical record samples:

The same sample size will be taken from

**Classification of Blood Pressure Levels<sup>15</sup>**

Category	SBP (mmHg)	DBP (mmHg)
Normal BP	<120	<80
Pre-HTN	120–139	80–89
Stage 1 HTN	140–159	90–99
Stage 2 HTN	≥160	≥100

HTN= Hypertension, SBP=systolic blood pressure, DBP=diastolic blood pressure.

medical records. The following are the inclusion criteria: Hypertensive patients with ≥ BP 140/90 or take treatment for HTN of both sex, patients aged 18 years or more, patients with BP 140/90 or more or who take treatment for HTN, patients not having any other diseases or taking drugs for any other diseases documented at family records of patients, mentally competent patients, regular follow up at PHC, patient receiving care from primary health care center for more than 6 months.

Exclusion Criteria included pregnant patients, patients having co-morbid diseases.

Tools of the study: *Five Care Performance measures (processes of care and outcome measures)*<sup>15</sup> included (1) HTN screening, defined as the percentage of patients aged 18 years or older who received routine BP screening conducted in a clinician’s office using an arm cuff and a calibrated sphygmomanometer. (2) Access to hypertensive care, defined as the percentage of patients who began care in the first year of diagnosis. (3) Prescription of management plan, defined as the percentage of patients who were counseled and encouraged to make therapeutic lifestyle changes and prescribed necessary antihypertensive drug therapy. (4) Follow-up, defined as the percentage of patients who were diagnosed with HTN and regularly follow-up in a scheduled visit. Patients should return for follow-up and adjustment of medications at monthly intervals or less until the BP goal reached. After BP is at goal and stable, follow-up visits can usually be at 3- to 6-

month intervals, or more often if necessary. (5) HTN control, defined as the percentage of adults 18–85 years diagnosed HTN whose last BP measurement was less than 140/90.

*Quality of Care indicators* (assessment of quality of care provided to hypertensive patients at PHC for the last

year)<sup>16</sup> for assessment of quality of care, adherence of the physicians to 10 indicators were evaluated). Data was obtained from medical records of hypertensive patients for the last year. Quality of care was accepted at 60% or more.

**Screening**

1.SBP and DBP should be measured in adult women otherwise presenting for care at least once each year

**Diagnosis**

2.Patients with a new diagnosis of stage 1-2 HTN should have at least 3 measurement on different days with a mean SBP of > 140 mm Hg and/or a mean DBP of > 90 mm Hg.

3. Initial history and physical examination of patients with HTN should document assessment of at least 2 items from each of the following groups(:

- 3a. History: Family or personal history of premature CVD, diabetes, or hyperlipidemia.
- 3b. Medication or substance use: Personal history of tobacco abuse, alcohol abuse, or medications that may cause HTN.
- 3c. Physical examination: Examinations of the fundi, heart sounds, abdomen for bruits, peripheral arterial pulses, and neurologic system.

4.Stage 1+ hypertensive women taking drugs that may cause HTN should have the drug discontinued (at least temporarily) before pharmacotherapy is initiated (e.g. oral contraceptives, nasal decongestants, appetite suppressants, monoamine oxidase inhibitors and tricyclic antidepressants)

5. Initial laboratory tests should include the following:

- 5a. Urine analysis
- 5b. Glucose
- 5c. Potassium
- 5d. Creatinine
- 5e. Cholesterol
- 5f. Triglyceride

6. Patients with average SBP of >140 mm Hg or DBP of > 90 mm Hg as determined on at least 3 separate visits, should have a diagnosis of HTN documented in their record.

**Treatment**

7. First– Line treatment for HTN is lifestyle modification. The medical record should indicate counseling for at least 1 of the following interventions before pharmacotherapy.

- Weight reduction
- Increased physical activity
- Low-sodium diet
- Alcohol intake reduction

8. stage 1-2+ hypertensive patients whose blood pressure remains stage 1-2+ after 6 months of lifestyle medication should receive pharmacotherapy.

**Follow-up**

9.Hypertensive patients should visit the provider at least once each year.

10. Hypertensive patients with persistent elevations of SBP of >160 mm Hg or DBP of > 90 mm Hg should have 1 of the following interventions recorded in the medical records.

- Change in dose or regimen of antihypertensive agents.
- Repeated education regarding lifestyle modifications.

*HTN= Hypertension, SBP=systolic blood pressure, DBP=diastolic blood pressure, CVD=cardiovascular disease*

*Patients’ Satisfaction (patients’ perspective about quality of care)*  
 Patients’ Satisfaction was assessed by CPCQ translated into Arabic by College of Culture Suez Canal University. The questionnaire contained 25 items, available responses for each item range

from “Never” with a value of “1”, “Rarely” with a value of “2”, “Sometimes” with a value of “3”, “Mostly” with a value of “4” and “Always” with a value of “5”.<sup>17</sup>  
 Patients’ characteristics were determined (e.g. age, gender, marital status,

occupation, educational level, smoking and health insurance coverage).

*Pilot Study:* The questionnaire was pre-tested on ten patients before the beginning of data collection test the relevance of the questionnaire to the objectives of the study, determine if the questions asked were understood by the respondents or not, to perform any modification needed, to determine the needed time to complete questionnaire. These results were not going to be included in the study.

### Data Management and Statistical Analysis

Data collected was coded, entered and analyzed using Microsoft Excel software. Statistical Package for Social Science 16 (SPSS 16) for Windows were used for data analysis. The independent data of the study were analyzed. Analysis of the clinical profile, sociodemographic and other variables. Firstly, the relation between the dependent and independent variables were studied using the Chi-square test and the t-test. Second, the significant variables will be subjected to multiple logistic regression analysis. Values of a  $p < 0.05$  were considered statistically significant. We considered various factors in selecting the covariates to be included in our analyses. First, we considered all the variables that are statistically related to the various clinical performance measures in bivariate analyses. We identified variables which found to have a significant impact on clinical quality and outcomes. We then considered problems relating to multi-co linearity between variables and remove certain variables which are closely related to address this issue. accounting for key patient and measure institutional characteristics, which would and which would be of particular interest and policy relevance to primary health care centers. Considering all of these factors, we were opt for a general model of clinical quality

accounting for key patient and institutional characteristics, which would be relevant regardless of the specific measure and which would be of particular interest and policy relevance to primary health care centers.

**Table 1: Sociodemographic characteristics of the studied patients (n=72):**

Variables	Studied patients (n=72)
<b>Age (years), n (%)</b>	
30-	7 (9.7)
45-	43 (59.7)
60+	22 (30.6)
Mean $\pm$ SD	53.9 $\pm$ 8.3
Range	31-68
<b>Gender, n (%)</b>	
Male	8 (11.1)
Female	64 (88.9)
<b>Marital status, n (%)</b>	
Unmarried	17 (23.6)
Married	55 (76.4)
<b>Occupation, n (%)</b>	
House Wife	60 (83.3)
Semi-professional working	7 (9.7)
Business working	3 (4.2)
Manual working	2 (2.8)
<b>Educational level, n (%)</b>	
Illiterate	24 (33.3)
Read & write	16 (22.2)
Primary/ secondary	31 (43.1)
High Education	1 (1.4)
<b>Smoking, n (%)</b>	
Non-smokers	70 (97.2)
Smokers	2 (2.8)
<b>Health insurance coverage, n (%)</b>	
Non-insured	68 (94.4)
Insured	4 (5.6)

*SD=standard deviation, non-working=retired and housewives, semi-professional working=clerk, social workers, librarians, teachers and nurses, business working= traders, sellers and sales managers.*

### Ethical Considerations

An informed consent was obtained from all the participants before taking any data or doing any investigations. The consent is containing explanation of the study

aim in a simple manner to be understood by lay people. No harmful maneuvers will be performed or used. All data were considered confidential and will not going to be used outside this study without patient's approval. All data were used in this research only. Researcher phone number and all possible communicating methods were identified to the participants to return at any time for any explanation. All participants were announced by the result of the study. Participants had the right to withdraw from the study at any time without giving any reason. Any professional help that was needed by the study subjects was provided or arranged by the investigator. Signature fingerprints of the patients were taken.

**Results**

This study was conducted to assess the quality of care provided to hypertensive patients at the PHC in Ismailia City, Egypt. Four PHCUs were included; Elshikh Zayed, Elsalam, Elshohdaa and Elsabah banat. Seventy two hypertensive patients from these four PHCUs (18 patients from every unit) were selected to assess the quality of the received care. All the studied PHCUs were large units which has been working for more than 10 years. The four centers were using records as data reporting method. Table (7) showed that caregivers wereinvolved in the decision making of the received care (83.2%) and caregivers were satisfied with the received care (90.3%).

The most common deficient indicators for assessment of quality of care provided to hypertensive patients were performing lifestyle modification (5.6%)

Table (9) shows the multivariate regression analysis model of factors affecting care performance among the studied patients. Significant factors were absence of health insurance, presence of stage I HTN, degree of caregiver

involvement, and adequate quality of care.

**Table (2) Blood pressure (BP) measurement of the studied patients (n=72)**

Variables	Studied patients (n=72) N (%)
<b>Stages of HTN</b>	
Stage I HTN	54 (75.0)
Stage II HTN	18 (25.0)
<b>Systolic BP</b>	
<140 mmHg	41 (56.9)
≥140 mmHg	31 (43.1)
Mean ±SD	136.67±14.41
Range	110-180
<b>Diastolic BP</b>	
<90 mmHg	35 (48.6)
≥90 mmHg	37 (51.4)
Mean ±SD	86.11±9.39
Range	70-110

HTN= Hypertension.

**Table (3) Five care performance measures among the studied patients (n=72)**

Variables	Studied patients (n=72) No. (%)
<b>Five care performance measures</b>	
Number of patients who received routine BP screening	72 (100.0)
Number of patients who began care in the 1 <sup>st</sup> year of diagnosis	70 (97.2)
Number of patients who initiated therapeutic lifestyle changes	4 (5.6)
Number of patients who regularly follow-up (every 3-6 months)	30 (41.7)
Number of patients who had the last BP measurement <140/90	29 (40.3)
<b>Total score of care performance</b>	
Inadequate	41 (56.9)
Adequate	31 (43.1)
Mean ±SD	2.92±1.03
Range	2-5

BP=Blood pressure. adequate care means 60% or more

**Discussion**

The present study shows that more than one-third of the studied patients (34.7%) had a family history of HTN. Which is in agreement with study done at PHC

Centers at Abha, Saudi Arabia, 25% of their patients had positive family history.<sup>18</sup>

Our study revealed that the mean age of the studied patients was 53.9±8.3 years.

The demographic risk factors including age was evaluated in several studies. Individuals aged between 45 to 62 years had three-folds more common of hypertension.<sup>19</sup> In addition, Sheppard et al.<sup>20</sup> mentioned that stage I HTN was more common in age group 40-54 years versus age group 55-74 years. In 2015, Gebreselassie and Padyab<sup>21</sup> reported that the most frequent age group of stage I hypertensive individuals was between 50 to 59 years in Ghana (28.3%) and between 70 to 74 years in South Africa (33.1%).

The present study also reported that the frequency of female patients was higher than male patients (88.9% versus 11.1%, respectively). This female-to-male difference may be attributed to the higher attendance rate of female patients to PHCUs in comparison to male patients at the morning (day) session. The reasons for this increased attendance are generally due to the higher involvement of women in the healthcare provided to their children and other sick relatives.<sup>22</sup>

This is in agreement with several Arab studies found that more than 50% of the hypertensive patients were females.<sup>23</sup> Ibrahim et al.<sup>26</sup>, Tazi et al.<sup>24</sup>, Bener et al.<sup>25</sup>, Al-Nozha et al.<sup>26</sup> and Temmar et al.<sup>27</sup> studies found that HTN prevalence was greater in females.

Our research indicated that the prevalence of stage I HTN was 75% and stage II was 25%. The prevalence of HTN varied widely in the Arab countries. The prevalence of stage II HTN ranged from 16.3% in Jordan<sup>28</sup> to 35.3-44% in Algeria.<sup>29</sup> Meanwhile, stage II HTN prevalence ranged from 25.2% (Oman)<sup>30</sup> to 39.6% (Morocco).<sup>24</sup>

The literature review revealed a higher prevalence of HTN in Arab countries (29.5%) compared to the USA (28%)<sup>31</sup> and sub-Saharan Africa (27.6%).<sup>32</sup> However, the prevalence of HTN in Arab countries was lower compared to European countries (44.2%).<sup>33,34</sup>

The difference in methodology of BP measurement between studies might also have influenced the prevalence of HTN and explain the variability. The main differences between these studies were the use of different equipment (i.e. sphygmomanometer versus electronic BP monitor), the number of BP measurements, and the method used to estimate the mean BP measurements (i.e. last two measurements versus all measurements).<sup>35</sup>

Our study reported that all patients received routine BP screening. It was in disagreement with the study done by Asch et al.<sup>36</sup> in which 84.2% of their patients received routine BP screening the difference may be due to different sample size between two studies.

Regarding routine BP screening, there is universal agreement among major national primary care organizations, including The JNC on Prevention, Detection and Treatment of HTN, the United States Preventative Service Task Force, the American Academy of Family Physicians, and the American College of Physicians on the utility of screening for HTN and the optimal interval for screening adults for HTN is not known.<sup>35</sup>

From our total studied patients (n=72), the patients who started antihypertensive management during the first year were 97.2%. In similar manner, Ibrahim<sup>37</sup> stated that around 80% of the total hypertensive patients began their treatment within the first year of diagnosis. He also declared that because of high prevalence of HTN in Egypt, the

**Table (4) Patient perception about the received care according to Client Perception of Coordination Questionnaire (CPCQ) (n=72)**

Variables	Patients' response (%)					
	Never	Rarely	Sometimes	Mostly	Always	NA
Receiving the needed services	0 (0.0)	3 (4.2)	10 (13.9)	35 (48.6)	24 (33.3)	0 (0.0)
Waiting too long till receiving the services	0 (0.0)	12 (16.7)	26 (36.1)	15 (20.8)	19 (26.4)	0 (0.0)
Being difficult to get transport to services	35 (48.6)	13 (18.1)	4 (5.6)	2 (2.8)	1 (1.4)	17 (23.6)
Receiving the needed medicine in the past 3 months	0 (0.0)	2 (2.8)	9 (12.5)	47 (65.3)	14 (19.4)	0 (0.0)
Unnecessarily tests or assessments by providers	12 (16.7)	19 (26.4)	13 (18.1)	9 (12.5)	1 (1.4)	18 (25)
Ttests or assessments being discussed with patients	0 (0.0)	7 (9.7)	12 (16.7)	19 (26.4)	32 (44.4)	2 (2.8)
Receiving services as coordinated	0 (0.0)	4 (5.6)	22 (30.6)	35 (48.6)	11 (15.3)	0 (0.0)
Feeling happy with the quality of received care	0 (0.0)	2 (2.8)	26 (36.1)	15 (20.8)	29 (40.3)	0 (0.0)
Being confused about the roles of different service providers	12 (16.7)	29 (40.3)	19 (26.4)	5 (6.9)	0 (0.0)	7 (9.7)
Providers' response to patients' needs changes in past 3 months	0 (0.0)	5 (6.9)	16 (22.2)	21 (29.2)	16 (22.2)	14 (19.4)
Getting conflicting advice from service providers	11 (15.3)	28 (38.9)	10 (13.9)	5 (6.9)	0 (0.0)	18 (25)
Complaining about care	20 (27.8)	22 (30.6)	25 (34.7)	2 (2.8)	1 (1.4)	2 (2.8)
Understanding own condition	0 (0.0)	1 (1.4)	14 (19.4)	31 (43.1)	26 (36.1)	0 (0.0)
Being able to cope with life	0 (0.0)	1 (1.4)	21 (29.2)	20 (27.8)	30 (41.7)	0 (0.0)
<b>Total perception</b>			43 (59.7%)			
			29 (40.3%)			
<b>Overall satisfaction level</b>			47 (65.3%)			
			14 (19.4%)			
			11 (15.3%)			

NA=Not Applicable

**Table (5) Patient perception about care received from General Practitioner (GP) (n=72)**

Variables	Patients' response (%)					
	Never	Rarely	Sometimes	Mostly	Always	NA
Agreement with GP about needed care	0 (0.0)	8 (11.1)	21 (29.2)	20 (27.8)	22 (36.6)	1 (1.4)
GP communicating with other providers	0 (0.0)	17 (23.6)	15 (20.8)	17 (23.6)	16 (22.2)	7 (9.7)
GP involving patient when making decisions about needed care	2 (2.8)	16 (22.2)	24 (33.3)	14 (19.4)	12 (16.7)	4 (5.6)
GP talking with patient about future care	2 (2.8)	10 (13.9)	9 (12.5)	15 (20.8)	15 (20.8)	21 (29.2)

NA=Not Applicable

treatment of HTN puts economic pressure on the Egyptian economy. Drug cost is the major determinant of the cost of care. In Egypt, the drug cost of HTN (total antihypertensive market) during the year 2011 was more than one billion Egyptian pounds, a dramatic increase from 600 million in 2007. Our study also highlighted that the patients who initiated therapeutic lifestyle were only 5.6% of the studied population, which considered very low

rate of lifestyle modification or low counseling. It was considered as a deficient indicator for assessment of quality of care provided to hypertensive patients. Which is in agreement with study done by Asch et al.<sup>36</sup> in USA as only 3.7% of their patients initiated therapeutic lifestyle modification. Approximately 60% of our patients had uncontrolled HTN. This high rate is similar to the findings of several Arab studies, where almost two-thirds of the

**Table (6) Unpaid caregivers helping the studied patients with daily life (n=72)**

Variables	Studied patients (n=72)	
	No.	%
<b>Unpaid caregivers</b>		
Spouse	24	33.3
Daughters	14	19.4
Sons	12	16.7
Parents	2	2.8
Other relatives	2	2.8
Others	1	1.4
No caregivers	17	23.6
<b>Total</b>	<b>72</b>	<b>100.0</b>

patients had uncontrolled HTN. The rates varied from 56% in Tunisia, 62.5%

in Egypt to 79.8% in Syria.<sup>24,29,38</sup> Asch et al.<sup>36</sup> found that poor control of BP was found in 58% of the studied patients. In the same manner study done at PHC centers in Saudi Arabia at 2001 revealed that 60% of hypertensive patients followed in PHC centers have uncontrolled SBP and 50% have uncontrolled DBP.<sup>39</sup> A similar pattern was shown in another study in Saudi Arabia, where uncontrolled BP was 63% in males and 76% in females. A lower figure (28.8%) was reported by Al-Shammari et. al.<sup>40</sup>

**Table (7) Patient perception about caregiver involvement in the received care (n=72)**

Variables	Patients' response (%)				
	Never	Rarely	Sometimes	Mostly	Always
<b>Caregiver involvement in decision making of received care</b>	0 (0.0)	12 (16.7)	23 (31.9)	14 (19.4)	23 (31.9)
<b>Caregiver satisfaction with received care</b>	1 (1.4)	6 (8.3)	16 (22.2)	13 (18.1)	36 (50.0)

**Table (9) Multivariate regression analysis model of factors affecting care performance among the studied patients (n=72)**

	Coefficients		T	p-value
	B	Beta		
<b>(Constant)</b>	.711		.763	.448
<b>Age</b>	.003	.046	.373	.711
<b>Gender</b>	.245	.156	.841	.404
<b>Marital status</b>	-.073	-.062	-.529	.599
<b>Occupation</b>	.050	.078	.462	.646
<b>Educational level</b>	.002	.003	.023	.982
<b>Smoking</b>	-.449	-.107	-.807	.423
<b>Insurance</b>	<b>.531</b>	<b>.247</b>	<b>1.833</b>	<b>.042*</b>
<b>Family history of HTN</b>	-.098	-.094	-.730	.468
<b>HTN stage</b>	<b>-.512</b>	<b>-.440</b>	<b>-3.972</b>	<b>.0001**</b>
<b>Perception about the received care</b>	-.209	-.183	-1.598	.116
<b>Perception about caregiver involvement</b>	<b>-.209</b>	<b>-.199</b>	<b>-1.722</b>	<b>.040*</b>
<b>Perception about care received from GP</b>	.204	.187	1.624	.110
<b>Adequate quality of care received</b>	<b>.258</b>	<b>.259</b>	<b>2.204</b>	<b>.032*</b>

\*Significant  $p < 0.05$ , highly significant  $p < 0.01$ , HTN=HTN, GP=General Practitioner.

The high prevalence of uncontrolled HTN is due in part to a lack of awareness: 32% of people with the disease do not know they have it. Almost two-thirds of Arab patients with detected HTN are unaware of their high BP, ranging from 62.5% in Egypt to 79.8% in

Syria.<sup>24-29</sup> One potential explanation for uncontrolled HTN is suboptimal quality of care. Studies have shown that many patients are not receiving essential antihypertensive care.<sup>41</sup>

Our data stated that the prevalence of inadequate care of hypertensive patients

was higher than adequate care (56.9% versus 43.1%, respectively), which was in agreement of Berlowitz et al.<sup>41</sup>, who found that 40% of diagnosed hypertensive patients had inadequate care of BP despite an average of more than six HTN-related visits per year. This is in disagreement of study done by Asch et al.<sup>36</sup> in which 64% of their patients received adequate care the difference may be due to different methodology, different sample size or patient perspectives.<sup>41</sup>

Our findings emphasized that the most common problems facing the patients were waiting too long till receiving the services (83.3%). Waiting and treatment time are usually regarded as important

determinants of patient satisfaction and service quality. Reducing outpatient's waiting time is not only valuable for patients but also helpful to decrease the clinic workload.<sup>42-43</sup>

In this regard, Aeenparast et al.<sup>44</sup> stated that over a half of the patients complained from prolonged waiting time before physician's entrance at the clinic. They indicated that combining physician's work time changing with patient's entry time changing would decrease waiting time by 71.40%.

The patients were also confused about the roles of different service providers (33.3%). This may be due to the ineffective communication between the patients and health care professionals.

**Table (8) Indicators for assessment of quality of care provided to hypertensive patients for the last year (n=72)**

Variables	Studied patients
	(n=72) No. (%)
1-Screening BP	72 (100.0)
2-Diagnosing of HTN (at least 3 measurements on different days)	71 (98.6)
3-Taking initial history and performing physical examination	53 (73.6)
4-Discontinuing drugs that causes HTN	55 (76.4)
5-Performing initial laboratory tests	48 (66.7)
6-Documenting diagnosis of HTN in therecords	72 (100.0)
7-Counselling about life style modification	4 (5.6)
8-Receiving pharmacotherapy	70 (97.2)
9-Following-up at least once each year	72 (100.0)
10-Changing in dose or regimen of antihypertensive agents	42 (58.3)
<b>Total score of quality of care</b>	
Inadequate	33 (45.8)
Adequate	39 (52.2)
Mean ±SD	6.8±0.88
Range	6-9

*BP=Blood pressure, HTN=HTN. Adequate quality of care means 60% or more.*

There is significant correlation between patient-physician communication and positive patient's satisfaction. Health providers must spend enough time communicating with the patients to define their exact role in health service.<sup>45</sup> The most common complaints of our patients included that GP never or rarely involving patient when making decisions about their needed care (25.0%). In the

same way, studies by El-Dib et al.<sup>46</sup>, Villas-Boas et al.<sup>47</sup> and Levit et al.<sup>48</sup> indicated that there is a lack of patients' involvement in decision making.

Patients' participation in decision making in health care and treatment causes improved disease control, better physical functioning, enhanced patients' compliance with secondary preventive

actions and improvement in patients' health.<sup>49,50</sup>

Emphasizing the importance of participation in decision making process motivates the service provider and the health care team to promote participation of patients in treatment decision making. These efforts include enhancement of patient access to multifaceted information providing systems and tools that help patients in decision making.<sup>51</sup> With enhanced patient participation, and considering patients as equal partners in healthcare decision making patients are encouraged to actively participate in their own treatment process and follow their treatment plan and thus a better health maintenance service would be provided.<sup>52</sup>

Our research showed that GP rarely communicating with other providers (23.6%). Researchers have found associations between better nurse-physician communication and collaboration and more positive patient outcomes, i.e., lower mortality, higher satisfaction, and lower readmission rates.<sup>46, 53,54</sup>

Effective communication among health care providers is challenging due to a number of interrelated dynamics. First, health care is complex and unpredictable, with health care providers from a variety of disciplines involved in providing care at various times throughout the day, often dispersed over several locations, creating spatial gaps with limited opportunities for regular synchronous interaction.<sup>55</sup> Second, care providers often have their own disciplinary view of what the patient needs, with each provider prioritizing the activities in which he or she acts independently.<sup>56</sup> Third, differences in education and training among professions often result in different communication styles and methods that further complicate the scenario and render communications ineffective. Fourth, although teamwork and effective

communication are crucial for safe patient care, the educational curricula for most health care professions focus primarily on individual technical skills, neglecting teamwork and communication skills.<sup>57</sup>

According to our analysis, the overall negative patient perception about the received care was 40.3%. The reason for this can be workload on physician during the day at the PHCU, which led to the tiredness of the physicians and their assisted staff that make them to be care less with the patients and in turn increase the negative perception of the patients. The gap between patients' expectations and perception indicates the level of the service quality. Good quality of care is achieved when the services delivered by the health providers meets the patient's perceptions, needs and expectations.<sup>58,59</sup> The study performed by Abedi et al.<sup>60</sup> showed that there was a great gap between patients' perceptions and their expectations. The service quality gaps indicated that the health care providers failed to meet the expectations of their patients. The results of this analysis provide evidence that service provider gaps must be reduced.

The majority of our patients had caregiver which include mostly the spouse (33.3%), daughters (19.4%) or sons (16.7%). Meanwhile, 23.6% of the studied patients didn't have any caregiver which could over burden the patients. Our findings emphasized that the prevalence of inadequate quality of care was 47.8%. Consistent with our results, Asch et al.<sup>61</sup> found that the patient overall negative quality score was 43% of patients received suboptimal quality of care (i.e., they didn't receive all recommended care for which they were eligible).

One of the significant factors affecting care performance among our studied patients was absence of health insurance. In the same direction, Nguyen and

Knowles<sup>62</sup> found demand increases significantly with the expected benefits of health insurance as measured by proximity to and quality of care at tertiary hospital. In disagreement with these findings, Abuosi et al.<sup>63</sup> detected that there was no significant difference in perceptions of quality between insured and uninsured patients. However, there was a significant difference between insured and uninsured patients in respect of financial access to care

Our research showed that caregivers were involved in the decision making of the received care (83.2%) and caregivers were satisfied with the received care (50%).

The CCM in the care of chronic conditions, such as HTN, emphasizes the role of hypertensive patients as being their own principal decision maker and the importance of caregivers and community support in self-management. Patients are at the center of the care model, with health providers, caregivers, and community interacting in different ways to influence and support health decisions.<sup>64-65</sup>

Health care providers must recognize the collaborative partnership between the patient, care team and caregivers, each with their own expertise in managing that person's health and who share in the decision-making process. This collaborative partnership is important in supporting the patient's management proactively during planned encounters and reactively as needed to make changes and adjustments in the treatment plan to achieve optimal care.<sup>5,64,66</sup>

## Conclusion

The most deficient indicator for assessment of quality of care provided to hypertensive patients was lifestyle modification as the patients who initiated therapeutic lifestyle were only 5.6% of the studied population, which considered very low rate. The most

common problems facing the patients were waiting too long till receiving the services 83.3%. The most common complaints of the patients included that GP never/rarely involving patient when making decisions about needed care (25.0%) and GP rarely communicating with other providers (23.6%).

Also, there are several limitations of this study. First, the study was conducted in the urban area omitting the rural areas. Second, the interview with illiterate patients lacks the accurate response rate. Third, medical records were undefined regarding accuracy and completeness. Fourth, paid papers access was limited. Last, Egyptian researches were unpublished.

We recommended the encouragement of the recording system to enhance the quality of care. The improvement of physician adherence to the standard guidelines may be accomplished by conducting more training supervision. Training the physicians on better counseling toward life style modification are also suggested. Other researches could be done to compare quality of care in hospital setting versus primary care setting. Further studies are needed to improve physician counseling regard life style modification.

**Recommendations:** Raising the awareness of disease nature and its complications by health education, Improve compliance of patients to treatment, life style modification and follow, encouraging recording system to enhance the quality of care.

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