

Out of Pocket Expenditure on Non-Communicable Diseases among Egyptian Patients

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ABSTRACT

Background: Non communicable diseases (NCDs) are now the major cause of death and disability worldwide and increasingly affect people from developing as well as developed countries. NCDs account for 44 % of premature deaths worldwide. Over the next 20 years, it will cost > US \$30 trillion. It was defined as the total amount of own money respondents spent on both medical expenses and nonmedical expenses related to care processes pertinent to healthcare. High levels of out of pocket expenditure on healthcare may leave insufficient income for other necessities, and may impede access to healthcare, affecting health status and quality of life. **Objective:** To determine the level of out of pocket expenditure of Egyptian patients who suffered from non communicable diseases. **Methods:** A descriptive cross sectional study was conducted on Al-Hosary Family Health Center (6th October City, Egypt) targeted chronic patients older than 18 years with one or more of diabetes mellitus, hypertension and dyslipidemia. An interviewing questionnaire was designed for data collection, which had been gathered during the period from February, 2014 to end of April, 2014. The number of patients who attended the center in that time and accepted to participate in the study and were sure about data related to their diseases and costs were 146 patients. **Results:** Results showed that mean age of the study participants was 48±6 years. Majority (76.7%) of the participants was females, 53.4% of the participants were suffering from DM while those who were suffering from hypertension represented 39.7% and 29.5% of them were suffered from dyslipidemia. 87% of the studied sample was non smoker while only 1.4% were alcoholic. 36.3% of the participants had different levels of regular physical activity; 11 % of them reached the required level of physical activity (≥ 30 minutes/day). Measuring of the obesity parameters revealed that mean BMI was 27±3 and mean waist circumference was 104±2 cm. Concerning out of pocket expenditure, 44.5% of the participants spent 500-1000 Egyptian pounds monthly for the management of their chronic diseases (DM, hypertension, dyslipidemia) while those who spent <500 L.E./month were 49.3%, and few patients (6.2%) reported that they spent >1000 L.E. monthly. The mean monthly out of pocket expenditure for the studied patients was 506.3±202.9 L.E. Concerning monthly out of pocket expenditure in relation to gender and employment, there is no significant statistical differences. There is a statistical highly significant difference between monthly out of pocket expenditure and number of chronic diseases. **Conclusion:** There is a high out of pocket expenditure for Egyptians with NCDs. **Recommendations:** Searching for alternatives for financial support of those patients, establishing a national health insurance program, effective intersectoral action, and improved access to basic healthcare.

Keywords: Non communicable diseases, out of pocket expenditure.

INTRODUCTION

Non communicable diseases (NCDs) are now the major cause of death and disability worldwide and increasingly affect people from developing as well as developed countries.⁽¹⁾ The 2010 WHO Global Status report on NCDs showed that more than 36 million people died from NCDs in 2008, mainly cardiovascular diseases (48%), cancers (21%), chronic respiratory diseases (12%), and diabetes (3%). Nearly 80% of these deaths occurred in low- and

middle-income countries, where, on average, they now exceed communicable diseases as the major cause of disease burden.⁽²⁾ NCDs account for 44 % of premature deaths worldwide. The number of deaths that results from NCDs is double the number of deaths that results from a combination of infectious diseases (including HIV/AIDS, tuberculosis and malaria), maternal and perinatal conditions and nutritional deficiencies. Over the coming decades the

burden from NCDs is projected to rise particularly fast in the developing countries.⁽³⁾ It is expected that about 338 million people worldwide will die of one or more chronic NCDs in the next 10 years.⁽⁴⁾

Many developing countries now find themselves at a stage of epidemiologic behavioural transition in which they face a growing burden of NCDs on top of the ongoing hazards of under-nutrition and communicable diseases. This reflects a significant change in diet habits, physical activity levels and tobacco use. A recent report from WHO identified six risk factors associated with NCDs as leading global risk factors for death: tobacco use, physical inactivity, overweight or obesity, high blood pressure, high blood glucose levels, and high cholesterol levels. Moreover, they pervade countries of all income levels.^(3,5)

Over the next 20 years, NCDs will cost more than US \$30 trillion, representing 48% of global gross domestic production (GDP) in 2012 and pushing millions of people below the poverty line with dramatic impact on productivity and quality of life.⁽⁶⁾ NCDs and related risk factors impose a significant burden on both the poor, across countries or within countries; and those of working age. Approximately 80% of all disability adjusted life years (DALYs) are lost due to NCDs before age 60 in low- and middle-income countries.⁽⁷⁾ A study in Egypt found the aggregate labor supply to be approximately 19% below its potential, driven by lost employment and reduced numbers of hours worked by those reporting chronic conditions. The findings implied an overall production loss of roughly 12% of Egypt's national GDP.⁽⁸⁾ Out of pocket expenditure was defined as the total amount of own money respondents spent on both medical expenses and nonmedical expenses (e.g. transport, home care) related to care processes pertinent to healthcare.⁽⁹⁾ High levels of out of pocket expenditure on healthcare may leave insufficient income for other necessities, and may also impede access to healthcare, affecting health status and quality of life.⁽¹⁰⁾ Out of pocket expenditure is often felt most severely if it becomes excessive relative to income, particularly for elderly people with multiple chronic conditions who require regular and on-going engagement with the health system

for the management of their health conditions.^(11,12)

Aim of the Study: To determine the level of out of pocket expenditure of Egyptian patients who suffered from non communicable diseases and to assess the burden of these diseases including their risk factors and healthcare utilization.

SUBJECTS AND METHODS

A descriptive cross sectional study was conducted at Al-Hosary Family Health Center (6th October City, Giza, Egypt) targeted chronic patients older than 18 years who were suffering from one or more of diabetes mellitus (DM), hypertension and dyslipidemia to assess the burden of these diseases including their risk factors, healthcare utilization and out of pocket expenditures for the last three months.

After reviewing of all available information related to the aim of the study, an interviewing questionnaire was performed to collect data from patients. The questionnaire contained:

- a. **Socio-demographic data:** Age, gender, educational status, marital status, employment status, family income and presence of NCDs (diabetes mellitus, hypertension and/or dyslipidemia).
- b. **Health behavior:** History, types, amount & duration of smoking, alcohol consumption and drug abuse. Physical activity, dietary habits and obesity (Body Mass Index and waist circumference) were also collected.
- c. **Self monitoring of diseases:** Data about their self monitoring of DM, hypertension and dyslipidemia via using of special devices in their home settings.
- d. **Healthcare utilization:** Number of visits to the healthcare professionals and hospital admissions during the past 3 months due to these diseases.
- e. **Out of pocket costs:** These costs included visits to the healthcare professional, laboratory and diagnostic examination and hospitalizations. Also, it includes indirect costs related to these diseases such as transportation fees, changeable parts of related devices, home care costs and so on. The sample included all chronic patients older than 18 years who were suffering from one or more of diabetes mellitus, hypertension & dyslipidemia during the specified time of the

study and accepted to participate in the study. After avoiding of patients who were unsure about their disease data or costs for last three months, the sample included 146 patients.

The field work was carried out in Al-Hosary Family Health Center from February, 2014 to the end of April, 2014. The total sample was collected in a total 24 working days, average 3 hours per day.

The processing of the collected data of the study was started at early stage to deal with the collected data with great accuracy. Variables were coded for proper extraction of data. The collected data was statistically managed using SPSS program version 21. The mean was used as a measure of central tendency. The standard deviation was used as a measure of dispersion. Unpaired t and one way ANOVA tests were used for comparing means. The accepted level of significance was adjusted at $P < 0.05$.

RESULTS

The current study showed that the mean age of the study participants was 48 ± 6 years. Majority of the participants was females (76.7%) and 32.9% of the participants had secondary school education while 20% were illiterate. Married people represented 77.4% of the studied sample. Among the participants, 69.2% were unemployed and 62.3% have a monthly income ranged from 1000 to 2000 Egyptian pounds, while 22.6% had a monthly income less than 1000 L.E. and people who had monthly income more than 2000 L.E. represented the minority (15.1 %) (**Table 1**).

Among the studied sample, 53.4% of the participants were suffering from diabetes mellitus while those who were suffering from hypertension represented 39.7% and 29.5% of them were suffered from dyslipidemia (**Table 2**). Also, 87% of the studied sample were non smoker while only 1.4% were alcoholic (**Table 3**). Further, 36.3% of the participants had different levels of regular physical activity (walking), majority of them were regularly walk for less than 15 minutes per day while 11% of all patients reached the required level of physical activity (≥ 30 minutes per day) (**Table 4**).

Salty foods were consumed 3 or 4 times per day by 56.8% of the studied patients, while those who were consuming foods rich of saturated fatty acids once or twice per day were

67.1% of individuals. For consumption of foods rich of unsaturated fatty acid foods, 59.6% of the participants were consume these foods once or twice per day, 62.3% of participants were consuming foods rich in carbohydrates 3 to 4 times per day, while 73.3% of participants were consuming proteins once or twice per day (**Table 5**). Measuring of the obesity parameters revealed that the mean body mass index was 27 ± 3 and mean waist circumference was 104 ± 2 cm (**Table 6**). **Table (7)** showed that 55.1% of diabetic participants ($n=78$) had a special device for blood sugar measurement. Among 58 participants who were suffering from hypertension, 32.8% of them had a special device for blood pressure measurement. For dyslipidemia, there are no available specific devices for measurement in Egyptian market.

Concerning out of pocket expenditure, 44.5% of the studied patients spent from 500 to 1000 L.E. per month for management of their chronic diseases (DM, hypertension, dyslipidemia), while those who spent less than 500 L.E. per month for the management of these chronic diseases were 49.3 %. Few percent (6.2%) of patients reported that they spent more than 1000 L.E. per month for their chronic diseases' management. The mean monthly out of pocket expenditure for the studied patients was 506.3 ± 202.9 L.E. (**Table 8**). **Table (9)** demonstrated the difference between males and females regarding monthly of pocket expenditure. The means were 493.2 ± 234.68 and 518.4 ± 223.38 L.E. for males and females respectively; there is no significant statistical difference between males and females. The means of monthly out of pocket expenditure for employed and unemployed patients were 496.8 ± 241.88 and 515.8 ± 229.76 L.E., respectively. There is no significant statistical difference between employed and unemployed patients regarding monthly out of pocket expenditure (**Table 10**). **Table (11)** showed the differences among means of monthly out of pocket expenditure in relation to number of chronic diseases (DM, hypertension, and dyslipidemia). The means for patients suffering from one disease, two diseases, and three diseases were 352.22 ± 78.93 , 522.85 ± 153.94 , and 643.83 ± 172.60 L.E. There is a high significant statistical difference among the three groups.

Table (1): Demographic characteristics of the studied sample

Variables	No.	%
Age (years)		
Mean \pm SD	48 \pm 6	
Gender (n = 146)		
Males	34	23.3 %
Females	112	76.7 %
Educational status (n = 146)		
Illiterate	29	19.9 %
Read & write	24	16.4 %
Primary	32	21.9 %
Secondary	48	32.9 %
University	13	8.9 %
Marital status (n = 146)		
Single	6	4.1 %
Married	113	77.4 %
Divorced	16	11.0 %
Widow	11	7.50 %
Employment (n = 146)		
Unemployed	101	69.2 %
Worker	9	6.2 %
Skilled worker	14	9.6 %
Employee	22	15.0 %
Family income per month (n = 146)		
Less than 1000 L.E.	33	22.6 %
1000 – 2000 L.E.	91	62.3 %
More than 2000 L.E.	22	15.1 %

L.E.: Egyptian pound

Table (2): Prevalence of chronic diseases among the studied sample

Chronic disease	No. (n=146)	%
Diabetes Mellitus	78	53.4
Hypertension	58	39.7
Dyslipidemia	43	29.5

Table (3): Prevalence of health behavior among the studied sample

Behavior	No. (n = 146)	%
Smoking		
Current smoker	12	8.2
Quitter	7	4.8
Non smoker	127	87.0
Alcohol consumption	2	1.4
Drug abuse	0	00.0

Table (4): Frequency distribution of physical activity among the studied sample

Physical activity (walking)	No. (n = 146)	%
Less than 15 minutes per day	24	16.4
15 – 30 minutes per day	13	8.9
30 – 60 minutes per day	9	6.2
More than 60 minutes per day	7	4.8
Total	53	36.3

Table (5): Frequency distribution of different dietary habits per day among the studied sample

Dietary item	Never	1 – 2	3 – 4	> 4
Salty foods	15 (10.3 %)	37 (25.3 %)	83 (56.8 %)	11 (7.5 %)
Saturated fatty acid foods	5 (3.4 %)	98 (67.1 %)	43 (29.5 %)	0 (0.00 %)
Unsaturated fatty acid foods	0 (0.0 %)	87 (59.6 %)	59 (40.5 %)	0 (0.00 %)
Foods rich in carbohydrates	0 (0.0 %)	41 (28.1 %)	91 (62.3 %)	14 (9.6 %)
Proteins	0 (0.0 %)	107 (73.3 %)	36 (24.7 %)	3 (2.1 %)

Table (6): Obesity parameters among the studied group

Obesity parameters	Mean \pm SD
Body mass index	27 \pm 3
Waist circumference	104 \pm 2 cm

Table (7): Patients using special devices for follow up measurements of their chronic diseases

Disease	No.	%
Diabetes mellitus	43 (n = 78)	55.1
Hypertension	19 (n = 58)	32.8
Dyslipidemia	0 (n = 43)	0.0

Table (8): Frequency distribution of monthly out of pocket expenditure for chronic diseases

Monthly expenditure in L.E.	No. (%)
Less than 500	72 (49.3 %)
500 – 1000	65 (44.5 %)
More than 1000	9 (6.2 %)
Mean \pm SD	506.3 \pm 202.9

Table (9): Monthly out of pocket expenditure in relation to gender

Monthly expenditure in L.E.	Males (n=34) No. (%)	Females (n=112) No. (%)	χ^2	P
Less than 500	15 (44.1%)	57 (50.9%)	0.82	0.665
500 – 1000	16 (47.1%)	49 (43.7%)		
More than 1000	3 (8.8%)	6 (5.4%)		
Mean \pm SD	493.2 \pm 234.68	518.4 \pm 223.38	t: - 0.555	P: 0.291

Table (10): Monthly out of pocket expenditure in relation to employment

Monthly expenditure in L.E.	Employed (n=45) No. (%)	Unemployed (n=101) No. (%)	χ^2	P
Less than 500	34 (75.6%)	38 (37.6%)	25.88	0.000002
500 – 1000	6 (13.3%)	59 (58.4%)		
More than 1000	5 (11.1%)	4 (4.0%)		
Mean + SD	496.8 ± 241.88	515.8 ± 229.76	t: -0.445	P: 0.3294

Table (11): Monthly out of pocket expenditure in relation to numbers of chronic diseases

Monthly Expenditure in L.E.	One disease (n = 45)	Two diseases (n = 77)	Three diseases (n = 24)
Mean + SD	352.22 ± 78.93	522.85 ± 153.94	643.83 ± 172.60
One way ANOVA:	F: 38,991	df: 2	p: 0.000**

** : highly significant

DISCUSSION

Non communicable diseases account for the greatest share in early death and disability. Chronic NCDs accounted for more than 60% (over 35 million) of the 57 million deaths worldwide. National economies are reportedly suffering significant losses because of premature deaths or inability to work resulting from chronic NCDs.⁽¹³⁾ The demographic characteristics of the studied sample demonstrated that the mean age of the study participants was 48 years. Majority of the participants was females. About one third of them had secondary school education while 20% were illiterate. Married people represented more than three quarters. About two thirds of the participants were unemployed and about two thirds of them had a monthly income ranged from 1000 to 2000 L.E. while 22% of them had a monthly income less than 1000 L.E. and people who had monthly income more than 2000 L.E. represented the minority (15%).

In our study, diabetic patients represented about half of the studied sample while hypertensive patients were a little more than one third of all patients. People who suffered from dyslipidemia were the lowest percentage behind diabetes mellitus and hypertension. These figures come in accordance with **Herman et al.**,⁽¹⁴⁾ **Ibrahim et al.**⁽¹⁵⁾ and **Aboul Ella et al.**⁽¹⁶⁾.

As health behavior plays an important role in occurrence of chronic NCDs, smoking, alcohol consumption, drug abuse, physical activity, dietary habits and obesity parameter have been

addressed. In this study, only 8.2% of patients were current smokers and this finding is not in agreement with figures obtained by Global Adult Tobacco Survey, Egypt country report,⁽¹⁷⁾ which resulted that about 20% of adult Egyptians are smokers. This may be attributed to low prevalence of smoking among Egyptian females who were the majority of the sample, the low prevalence of smoking among patients with these diseases, and if we add percent of the quitters (4.8%) to the smokers this will increase the prevalence to 13%.

Few patients were alcoholic while no one was drug abuser. These results coincided with **Hamdi et al.**⁽¹⁸⁾ who conducted a cross sectional study to detect the prevalence of alcohol consumption and drug abuse for 44000 Egyptians from 8 governorates and the study concluded low prevalence of alcohol consumption and drug abusing among Egyptians.

Overall physically active subjects represented about one third of the studied sample and 11% of all patients reached the required level of physical activity (≥ 30 minutes per day). This low rate of physical activity among the studied group may be attributed to obesity and musculoskeletal disorders, which usually present in old ages.

About half of the studied sample was consuming salty foods three to four times per day. This finding is considered an unhealthy behavior by studied individuals who 40% of

them are suffered from hypertension. **Erden *et al.***⁽¹⁹⁾ concluded that there is a direct positive correlation between salt intake and hypertension. Near two thirds of the studied sample were consuming foods rich in carbohydrates three to four times per day. Low-carbohydrate diet or low-glycemic diet may be effective in dietary management of type 2 diabetes, as both approaches prevent blood sugars from spiking after eating.⁽²⁰⁾ Saturated fatty acids foods as meat, full cream milk, butter and so on were consuming once or twice per day by two third of the studied sample while unsaturated fatty acid that present in vegetable oils, fish, nuts were consuming by 60% of the studied sample once or twice per day and 40% were consuming these foods three to four times per day. Considering results of consumption of food rich in unsaturated fatty acids, it was a favorable behavior by the studied sample as dietary polyunsaturated fatty acids may reduce the risk of coronary heart disease; the risk of cardiovascular diseases can be reduced by replacing saturated fats with polyunsaturated fats.⁽²¹⁾

The economic burden of NCDs is manifold in all levels of society, imposing costs at the individual, family, community and national levels. The growing dominance of NCDs in the share of global disease burden is due to their increase in low- and middle income economies.⁽²²⁾ Out of pocket expenditure is defined as the total amount of own money respondents spent on both medical expenses and nonmedical expenses (e.g. transport, home care) related to care processes pertinent to healthcare.⁽⁹⁾ Regarding economic burden and out of pocket expenditure related to NCDs, in our study, about half of the studied sample spent less than 500 L.E. per month while about 45% of them monthly spent an amount ranged from 500 to 1000 L.E. and only 6.2% reported that they spent more than 1000 L.E. per month. The mean of monthly expenditure for management of their chronic diseases (diabetes mellitus, hypertension and dyslipidemia) was 506.3±202.9 L.E. This figure represents considerable economic cost for households in Egypt considering limited family income and low GDP per capita of

Egyptians. An Australian study revealed that the mean out of pocket expenditure in the previous three months was 353AU\$ and 14% of respondents experienced a heavy financial burden (1 US Dollar=1.2 Australian Dollar \$).⁽²³⁾ Another Indian study showed that half of the Indian participants spent on an average 500 – 999 INR per year for doctor visits related to diabetes, hypertension and dyslipidemia (1 US Dollar=63.2 Indian Rupee).⁽²⁴⁾

Number of chronic diseases is an important factor for determining the monthly out of pocket expenditure, there is a statistical highly significant difference among patients of our study. The means for those who suffered from one disease, those with two diseases and those with three diseases were 352.22±78.93, 522.85±153.94, and 643.83±172.60 L.E., respectively. Out of pocket expenditure is likely to be influenced by a range of factors including the type, total number and severity of diseases and patients' socio-economic status.⁽²⁵⁾ Challenges to prevention of NCDs such as strengthened surveillance, more effective intersectoral action and improved access to basic healthcare are pivotal to better healthcare delivery outcomes. There is a tremendous need of a multifaceted NCDs surveillance system that should include reporting of NCDs, healthcare utilization (hospitalization, health professional visits) and associated costs (pharmacy, laboratory, and diagnostic costs) to better document individual perception towards the management of NCDs and its clinical and non clinical impact on health outcomes.

Conclusion: There is a high out of pocket expenditure for Egyptian households who suffered from non communicable diseases.

Recommendations: Searching for alternatives for financial support of those patients, establishing a national health insurance program, strengthened surveillance of NCDs, more effective intersectoral action and improved access to basic health care.

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