Журнал клінічних та експериментальних
JC&EMR
медичних досліджень

УДК 616.12-005.4-08-052:316.344

Abstract

*[1)] Diaa Kareem Abd-Ali *,*
[2)] Halima Yusuf Al-Rubaiyee
[1)] University of Kufa,
Kufa, P.O. Box (21), Najaf
Governarate, Iraq;
[2)] University of Baghdad,
Jadriyah, Baghdad, 17635, Iraq

THE IMPACT OF SOCIAL AND ECONOMIC FACTORS OF PATIENTS ON THEIR ADHERENCE TO MEDICATIONS AFTER ISCHEMIC HEART DISEASE IN AL-NAJAF CITY

Cardiovascular disease (CVD) remains a global health problem that affects millions of people worldwide. This disease affects people at all ages; it's not a disease of the elderly. Thus, this study is conducted to establish a data base for the patient adherence to medications and the impact of social and economic factors on such adherence after ischemic heart disease in Al-Najaf City.

Our **aim** was to assess patients' adherence to medications after ischemic heart disease (IHD), to assess the social and economic factors of the patients, which may affect their adherence to medications, and to find out the impact of social and economic factors on patients' adherence to medications.

Material and Method. We carried out a cross-sectional study in Al-Najaf Health Directorate, Al-Sadder Medical City and Al-Najaf Center for Heart Diseases and Surgery from June 5, 2013 to April 10, 2014. A non-probability sampling (purposive sample) of 102 patients diagnosed medically as the ischemic heart disease patients (angina and myocardial infarction) were included in the study. We collected the data using the semi-structured questionnaire, which consisted of three parts: 1) socio-demographic and clinical data form; 2) patient adherence to medications scale; 3) socioeconomic factors of a patient. The data were described statistically and analyzed using the descriptive and inferential statistical analyses.

Results and Discussion. Our results reveled a deficient in the patients' adherence to medications. Moreover, there was a significant impact of the social and economic factors on the patients' adherence to medications after ischemic heart disease.

Conclusion. We found a deficient in the patients' adherence to therapeutic recommendations, specifically to medications use. Certain defects were with the social and economic factors, which could enhance the patient adherence to medications. The intensive comprehensive wide population-based studies should be conducted to assess the factors, which affect the patient adherence to medications after the IHD suggesting a suitable solution for these factors to improve the level of patient adherence. The health education program should be implemented to increase patients' knowledge about importance of adherence to medications, certain factors that may affect their adherence, and possible ways to solve this problem.

Key words: impact, patient adherence, ischemic heart disease.

Corresponding author*:* * dheyaak.abedali@uokufa.edu.iq

Резюме
*[1)] Діа Карім Абд-Алі *,*
[2)] Халіма Юсуф Ал-Рубаї,
[1)] Університет м. Куфа, Куфа, поштовий індекс 21, провінція Наджаф, Ірак;
[2)] Багдадський університет, район Джадрія, Багдад, 17635, Ірак

ВПЛИВ СОЦІАЛЬНО-ЕКОНОМІЧНИХ ФАКТОРІВ ПАЦІЄНТІВ НА ДОТРИМАННЯ РЕЖИМУ ПРИЙОМУ ЛІКІВ ПРИ ІШЕМІЧНІЙ ХВОРОБІ СЕРЦЯ У МІСТІ АН-НАДЖАФ

Серцево-судинні захворювання стають глобальною проблемою, яка вражає мільйони людей по всьому світу. Ці хвороби вражають людей будь-якого віку, а не лише похилого. Тому, це дослідження було проведено для створення бази даних, в якій буде реєструватися дотримання пацієнтами графіку прийому ліків та вплив особистих соціально-економічних факторів на цей прийом при ішемічній хворобі серця в місті Ан-Наджаф (Ірак).

Нашою **метою** було оцінити дотримання режиму прийому ліків пацієнтами при ішемічній хворобі серця, вивчити соціально-економічні фактори пацієнтів, які можуть впливати на дотримання режиму прийому ліків, визначити вплив соціально-економічних факторів.

Ми провели одномоментне дослідження в Директораті з охорони здоров'я м. Ан-Наджаф, медичному центрі Аль-Саддер та в Центрі серцевих захворювань та хірургії м. Ан-Наджаф в період з 05.06.2013–10.04.2014 р. Цільова вибірка включала 102 пацієнти зі встановленим діагнозом ішемічна хвороба серця (стенокардія та інфаркт міокарда). Збір інформації проводився з використанням напівструктурованого інтерв'ю, що складалося з трьох частин: 1) соціально-демографічна та клінічна форма; 2) дотримання пацієнтом шкали прийому медикаментів; 3) соціально-економічні фактори пацієнта. Отримані дані було проаналізовано використовуючи описову статистику та статистичні висновки.

Отже, пацієнти недостатньо дотримуються приписаних терапевтичних рекомендацій, особливо режиму прийому ліків. Певний негативний вплив мали соціально-економічні фактори, які, навпаки, мали б покращити дотримання пацієнтами графіку прийому ліків. Ми вважаємо необхідним проведення низки глибоких комплексних досліджень населення для вивчення факторів, які впливають на дотримання пацієнтами режиму прийому ліків при ішемічній хворобі серця. Ці дослідження запропонують шляхи, як соціально-економічним факторам покращити рівень дотримання пацієнтами графіку прийому ліків. Також необхідно запровадити просвітницькі медичні програми аби підвищити знання пацієнтів про важливість дотримання режиму прийому ліків, про фактори, які впливають на цей режим та можливі шляхи вирішення проблем, які виникли.

Ключові слова: дотримання пацієнтами режиму прийому ліків, ішемічна хвороба серця.

Резюме

*[1] Диа Карим Абд-Али *,*
[2] Халима Юсуф Ал-Рубаи,
[1] Университет г. Куфа, Куфа, почтовый индекс 21, провинция Наджаф, Ирак;
[2] Багдадский университет, район Джадрия, Багдад, 17635, Ирак

ВЛИЯНИЕ СОЦИАЛЬНО-ЭКОНОМИЧЕСКИХ ФАКТОРОВ ПАЦИЕНТОВ НА СОБЛЮДЕНИЕ ГРАФИКА ПРИЕМА ПРЕПАРАТОВ ПРИ ИШЕМИЧЕСКОЙ БОЛЕЗНИ СЕРДЦА В ГОРОДЕ АН-НАДЖАФ

Сердечно-сосудистые заболевания стали глобальной проблемой, которая поражает людей во всем мире. Эти болезни поражают не только пожилых людей, но и людей любого возраста. Поэтому, мы провели это исследование с целью создание базы данных, в которой будут регистрировать соблюдение пациентами графика приема препаратов и влияние личных социально-экономических факторов на этот прием при ишемической болезни сердца в г. Ан-Наджаф (Ирак).

Нашей целью было провести оценку соблюдения режиму приема препаратов пациентами при ишемической болезни сердца, изучить социально-экономические факторы пациентов, влияющих на соблюдение режима приема лекарств, определить влияние социально-экономических факторов на соблюдение пациентами графика приема медикаментов.

Для этого мы провели одномоментное исследование в Директорате здравоохранения г. Ан-Наджаф, медицинском центре Аль-Саддер и в Центре сердечных заболевание и хирургии г. Ан-Наджаф в период с 05.06.2013–10.04.2014 г. Целевая выборка включала 102 пациента с диагностированной ишемической болезнью сердца (стенокардия и инфаркт миокарда). Сбор информации проводился с использованием полуструктурированного интервью, которое состояло из трех блоков: 1) социально-демографическая и клиническая форма; 2) соблюдение пациентами шкалы приема препаратов; 3) социально-экономические факторы пациентов. Полученные данные были проанализированы с использованием описательной статистики и статистических выводов.

Мы установили, что пациенты недостаточно соблюдают приписанные терапевтические рекомендации, особенно режим прием препаратов. Определенное негативное воздействие оказывали социально-экономические факторы, которые, наоборот, должны были улучшить соблюдение пациентами графика приема медикаментов. Мы считаем, что необходимо провести ряд глубоких комплексных исследований для изучения факторов, которые влияют на соблюдение графика приема препаратов пациентами после ишемической болезни сердца. Эти исследование смогут предложить пути, как социально-экономическим факторам улучшить уровень соблюдения пациентами графика приема медикаментов. Также необходимо внедрить проведение просветительских медицинских программ для повышения осведомленности пациентов про важность соблюдения режима приема препаратов, про факторы, которые влияют на этот режим и про пути решения возникнувших проблем.

Ключевые слова: соблюдение графика приема медикаментов, ишемическая болезнь сердца.

Автор, відповідальний за листування*:* * dheyaak.abedali@uokufa.edu.iq

Introduction

Cardiovascular disease (CVD) remains a global health problem that affects millions of people worldwide. Cardiovascular disease affects people at all ages and it's not a disease of elderly. Ischemic heart disease (IHD) is considered to be a most common of heart diseases that affects millions of people worldwide. It is also the main cause of morbidity and mortality in many developing countries. Approximately 42 % of total mortalities are related to IHD. In the industrialized countries, cardiovascular disease (including IHD) is the leading cause of death and affects as many women as men [1].

Patients, who survive the initial coronary event, have five to seven times the event rate of patients with similar risk factors but without overt CHD. Improvements in diet, physical activity and other lifestyle measures can decrease absolute cardiovascular risk, such as prevent premature death, reduce the need for interventional procedures and improve quality of life of patients with existing CHD [2].

World Health Organization (WHO) focused on the fact that the effective treatment is not always enough to keep optimal outcomes. Along with effective treatment, the patient adherence to the treatment is a key thing that will keep optimal outcomes. Treatment of ischemic heart disease requires not only medications to improve the patient's health status, but also life style modification and follow up. These aspects are required to keep optimal outcomes and improve the patient's health status, as well as, reduce the number of morbidity and mortality. The patient adherence can reduce costs and burden of health care services among families and health care settings. Furthermore, many patients may render this treatment ineffective. However, the basic problem, which makes the treatment ineffective, is the patient non-adherence to it. In addition, adherence to life style modification can give certain healthy benefits even at a risk factor level. All the modifiable risk factors can be eliminated through the patient adherence to therapeutic recommendations, as well as, controlling the onset, prognosis, and the outcomes of the illness [3, 4].

The problem of non-adherence to medical treatment remains a challenge for the medical professions and social scientists. Their efforts to explain and improve patient adherence often appear to be ineffective. Although, successful adherence interventions do exist, half of interventions seem to fail and adherence theories lack sufficient explaining power. Because of the widespread problem of adherence, a substantial number of patients do not get maximum benefit of medical treatment, resulting in poor health outcomes, lower quality of life and increased health care costs. In spite of many advances made in adherence research, non-adherence rates have remained nearly unchanged in the last decades [5].

Rate of adherence is usually reported as the percentage of the prescribed doses of the medication actually taken by the patient over a specified period [6].

The extent of non-adherence varies widely, and in different studies it has been recorded as low as 10 percent and as high as 92 % [7]. Extensive review of the literature revealed that in developed countries adherence to therapies averages 50 % [8].

Medication non-adherence can have negative consequences not only for the patient, but also for the provider, the physician, and even the medical researchers, who works to establish the value of the medication on the target population. The potential burden of medication non-adherence outcomes on health care delivery makes it an important public health concern [9].

In developing countries, the low socio-economic status raises challenge between patient's low economic status and his/her adherence to therapeutic recommendations. Based on this reason, the socio-economic status is considered to be an important factor that affects the patient adherence to therapeutic recommendations through make the patients to reform their priorities, although, it is not refer to an independent predictor of patient adherence [8].

The patient adherence to therapeutic recommendations may be threatened by many factors. These factors represent different aspects or dimensions, all of them sharing in deterioration of the patient's health status. One of these factors are the socio-economic factors [4].

Jin et al. mentioned to the different aspects of the socio-economic factors; they said that these factors might include: time commitment, cost of therapy, income and social support [3].

The patient adherence to therapeutic recommendations could be threatened by inability to take time off work for treatment; as a result, their rate of adherence could be affected [10].

Therefore, the longer travelling time, which patients spent to reach therapeutic centers, can also affect the rate of adherence [3].

Healthcare expenditure can be a large portion of living expenses for patients suffering from chronic diseases. Cost and income are two interrelated factors. Healthcare cost should not be a big burden, if the patient has a relatively high income or health insurance. A number of studies found that patients who had no insurance cover [11] or who had low income [12] were more likely to be noncompliant to treatment. However, even for patients with health insurance, health expenses could be a problem. More than one in ten seniors in the USA reported using less of their required medications because of cost [3].

Materials and methods

Study Design

A cross-sectional study was carried out in Al-Najaf Health Directorate, Al-Sadder Medical City and Al-Najaf Center for Heart Diseases and Surgery from June 5, 2013 to April 10, 2014.

Aims of the study:

1. to assess patients' adherence to medications after ischemic heart diseases;
2. to assess patients for social and economic factors that may affect their adherence to medications;
3. to find out the impact of social and economic factors of patients on their adherence to medications.

Study Sample

A non-probability sampling (purposive sample) of 102 patients diagnosed medically as the ischemic heart disease patients (angina and myocardial infarction) by the cardiologist in the Al-Najaf Center for Heart Diseases and Surgery.

Instruments

An assessment tool was composed from previous literature and developed by the researcher to measure the impact of social and economic factors on patient adherence to medications after ischemic heart disease. The final study instrument consisted of three parts*:*

1. socio-demographic and clinical data form;
2. patient adherence to medications scale;
3. socioeconomic factors of patients.

Data collection

The data were collected through the utilization of the developed questionnaire and by means of structured interview technique with the subjects, who were individually interviewed; they were interviewed in a similar way, by the same questionnaire.

Ethical considerations

The researcher obtained the legal governmental agreements before conducting the study; we explained clearly the objectives of the study to participants; participation was voluntarily.

Data analyses

In order to achieve the early stated objectives, the data of the study were analyzed using the statistical package of social sciences (SPSS) version 16 through descriptive and inferential statistical analyses.

Results

Table 1 shows that the majority of the study sample live in urban residential area (76.5 %) of the completely sample. This table also shows that the study subjects (61.8 %) are mainly males. The dominant age group is within 52–64 years (51 %) with mean and standard deviation equal to 57.96 and 10.987 respectively. Regarding, the marital status of subjects, the majority of them are married (89.2 %). Regarding the levels of education of subjects, the majority of the study samples are primary school graduates (13.7 %). Furthermore, this table displays the comparison significant levels, which related to each of the patients demographic data, as a high significant comparison level at p-value equal to 0.000 for the patient's residency, age groups, marital status, and level of education. A significant level of comparison (significant at p-value equal to 0.022) presents the patient's gender. A non-significant level of comparison (significant at p-value more than 0.05) presents the patient's occupational status.

Table 2 shows that more than half of the study samples suffer from angina (55.88 %). The cases of disease were once year and less (52.9 %), because of receiving health education about the therapeutic recommendations. The table shows that the majority of the study subjects receive health education (73.5 %). The majority of study samples said that they mostly got health education from the physicians (43.1%). Considering the number of previous hospitalization, the majority of study subjects (69.6 %) were admitted to the hospitals two times previously. This table also shows the comparison significant levels, which are related to clinical data of patients as a high significant comparison level (at p-value equal to 0.000); except for the patient diagnosis, there the level of comparison is non-significant (at p-value more than 0.05).

In the Table 3 we see that patients' responses to the medication domain items were fair at No. 1, No. 2, No. 5 and No. 7; poor at No. 3, No. 4 and No. 6. It means that the patients' responses were fair in 57.1 %, and poor in 42.9 % of the total number of the medications domain items.

Table 4 shows that patients' responses to the social and economic factors items were good at all items except for No. 4, where the patients' responses were fair. The patients' responses were good in 80 % and fair in 20 % of the total number of the social and economic factors items.

Table 5 shows that there is a high significant association between the social and economic factors and the patient adherence to medications, at p-value less than 0.01.

Table 1

Distribution of the study samples by their demographic data with a comparison significant

Demographic data	Groups	Freq.	Percent	Valid percent	C.S. P-value
Residency	Rural	24	23.5	23.5	Binomial test P = 0.000
	Urban	78	76.5	76.5	HS
Gender	Male	63	61.8	61.8	Binomial test P = 0.022
	Female	39	38.2	38.2	S
Age groups/ years	≤ 38	2	2	2	$\chi^2 = 77.314$ P = 0.000
	39–51	25	24.5	24.5	HS
	52–64	52	51	51	
	65–77	17	16.7	16.7	
	78 +	6	5.9	5.9	
	Mean ± SD		57.96 ± 10.987 yrs.		
Marital status	Married	91	89.2	89.2	$\chi^2 = 2.260$ P = 0.000
	Widow	9	8.8	8.8	HS
	Divorced	1	1	1	
	Separate	1	1	1	
Level of education	Illiterate	10	9.8	9.8	$\chi^2 = 19.059$ P = 0.004
	Able to read and write	19	18.6	18.6	HS
	Primary school graduate	28	27.5	27.5	
	Intermediate school graduate	14	13.7	13.7	
	Secondary school graduate	11	10.8	10.8	
	Institute	11	10.8	10.8	
	College and post graduated	9	8.8	8.8	

Note: n – 102 patients; non-significant at p-value more than 0.05; S – significant at p-value less than 0.05; HS – highly significant at p-value less than 0.01

Table 2

Distribution of the study sample by their clinical data with a comparison significant

Clinical data	Groups	Freq.	Percent	Valid percent	C.S.(*) P-value
Diagnosis	Angina	57	55.88	55.88	Binomial Test P = 0.276
	MI	45	44.11	44.11	NS
Duration, years	≤ 1.00	54	52.9	52.9	χ^2 = 117.21 P = 0.000
	1.01–4.50	39	38.2	38.2	HS
	4.51–8.00	5	4.9	4.9	
	8.01–11.50	3	2.9	2.9	
	11.51 +	1	1	1	
Receiving of health education	Yes	75	73.5	73.5	Binomial test P = 0.000
	No	27	26.5	26.5	HS
Sources of the received health education	Physician	44	43.1	43.1	χ^2 = 1.77 P = 0.000
	Nurse	8	7.8	7.8	HS
	Medical journals	5	4.9	4.9	
	Not receiving health education	27	26.5	26.5	
	Physician and nurse	9	8.8	8.8	
	Physician and television	2	2	2	
	Nurse and medical journals	3	2.9	2.9	
	Physician, nurse, and medical journals	1	1	1	
	Physician, nurse, and television	2	2	2	
	Physician, television, and internet	1	1	1	
Number of previous hospitalization	1	19	18.6	18.6	χ^2 = 167.02 P = 0.000
	2	71	69.6	69.6	HS
	3	9	8.8	8.8	
	4	2	2	2	
	5	1	1	1	

Note: n – 102 patients; non-significant at p-value more than 0.05; S – significant at p-value less than 0.05; HS – highly significant at p-value less than 0.01

Table 3

Distribution of the study samples by their responses to the medications domain items

List	Medications domain items	M.S	S.D	Sig.	Assessment
1.	Forget to take your medications	1.68	0.48	S	Fair
2.	Miss taking your medications because of the reasons other than forgetting	1.71	0.45	S	Fair
3.	Ever stopped taking your medications without telling your doctor because you felt worse when you took them	1.65	0.47	NS	Poor
4.	Forget to bring along your medications, when you travel or leave home	1.61	0.48	NS	Poor
5.	Stop taking your medications, when you feel like your symptoms are under control	1.73	0.44	S	Fair
6.	Ever feel annoyed about sticking to your treatment plan	1.55	0.49	NS	Poor
7.	Have difficulty with a recall to take all of your medications	1.76	0.44	S	Fair

Note: n – 102 patients; NS – non-significant at M.S 1–1.66; S – significant at M.S 1.67–2.33

Table 4

Distribution of the study samples by their responses to the social and economic-related items

List	Social and economic-related items	M.S	S.D	Sig.	Assessment
1.	I did not receive good support from my friends about the adherence to the recommendations	1.47	0.75	HS	Good
2.	I did not receive good support from my family about the adherence to the recommendations	1.39	0.67	HS	Good
3.	I was not able to take time off work to follow the recommendations	1.62	0.80	HS	Good
4.	I did not have enough money to follow the recommendations	2.10	0.83	S	Fair
5.	I used another source/s for treatment such as herbal, judicious, etc.	1.50	0.72	HS	Good

Note: n – 102 patients; S – significant at M.S 1.67–2.33; HS – high significant at M.S 1–1.66

Table 5
Association between the social and economic-related factors with the different studied domains of patient adherence to therapeutic recommendations

Patient adherence domains	Rating	Social and economic factors			C.C.	d.f.	Sig.
		Good	Fair	Poor			
Dietary recommendations	Poor	0	2	0	0.181	4	$\chi^2 = 3.437$ P = 0.488
	Fair	10	39	10			NS
	Good	3	28	10			
Healthy behavior	Poor	1	2	0	0.215	4	$\chi^2 = 4.922$ P = 0.295
	Fair	6	23	11			NS
	Good	6	44	9			
Medications	Good	0	3	6	0.463	4	$\chi^2 = 27.871$ P = 0.000
	Fair	2	17	11			HS
	Poor	11	49	3			
Follow up	Poor	0	1	0	0.097	4	$\chi^2 = 0.976$ P = 0.913
	Fair	13	67	20			NS
	Good	0	1	0			

Not: NS – non-significant at P > 0.05; HS – high significant at p-value less than 0.01

Discussion

The results demonstrated that the majority of the samples lived in the urban residential area. According to [13], the majority of the study subjects reside in big cities than countryside.

Saleem et al. (2011) stated that the majority of the study subjects lived in urban residential area, and the minority lived in the rural ones. These results might be got, because ischemic heart disease refers to a modern scourge of industrialized society, as well as, ischemic heart disease may increase in incidence among those persons in urban residential area, than in those from rural [14].

Firstly, people in rural residential area do physical exercises every day as compared with those in urban, so they are less risky to get ischemic heart disease. Secondly, people in rural residential area are more prone to get ischemic heart disease, because risk factors accumulate in urban than in rural areas (for example psychological stress).

Regarding gender, the study samples were mostly males. Saleem et al. (2011) [14] and Mehta et. al. (2004) [15] mentioned that males dominates among patients with ischemic heart disease. The gender differences (in the broad scope of health and illness) were the subjects of extensive investigations; they are currently gaining more attention in nursing. Women and men emphasize different aspects of their lives evaluating their levels of quality of life and life satisfaction; this may lead to the fact that ischemic heart disease is more common for men than women.

Regarding the age groups, the study illustrated that patients aged 52–64 dominated. This result is supported by Oliveira-Filho et. al. (2012) [16]; their results indicated that patients aged 52 years were the dominant age.

Moreover, these results are supported by many scientific facts, which report that the risk for ischemic heart disease increases as the individual's age increases. This fact can be explained by many factors one of them is that individuals with advanced age are less attendant to perform regular physical exercise; it is associated with physical impairment caused by ageism phenomenon. The risk for hypertension and diabetes mellitus increases as the patient's age increases; it may increase the incidence of ischemic heart disease in people with advanced age. Iestra, et. al. (2013) [17] stated that ischemic heart disease (e.g. myocardial

infarction (MI) or angina pectoris (AP)) constitute a large percentage of the secondary prevention groups. Older age (80 % of patients are older than 50 years) and the minority of women (30 %) characterize this group. The difference between the male and female patients can be explained by the incidence rate among different kinds of diseases; it refers to many factors such as physiological, psychological factors. These factors make men more vulnerable to get ischemic heart disease than women. However, these differences will decrease as woman's age becomes more advanced.

Regarding the marital status, the majority of study samples were married. This result is agreed with Bisiriyu (2008) [18]. This author found out that the highest percentage was for married patients. It is clear that patients in the same age are often married as compare with younger. Besides, those patients represented eastern population, in general eastern people are often attend to get married earlier, than people from other cultures.

Concerning the educational levels, the majority of study samples were graduates from secondary schools. Bisiriyu (2008) [18] also found out that the majority of the study subjects were secondary school graduates.

Regarding the diagnosis, there prevailed angina. This result is supported by Brown et. al. (2008) [19], they concluded that the higher percentage was for patients, who suffered from angina.

Considering the cases of disease, the higher percentage was for those, who suffered from the disease for one year and less. Talking about receiving of health education about therapeutic recommendations, our results demonstrated that the majority of the study subjects received health education. Physicians were the main source to receive health education.

Talking about the number of previous hospitalization, the higher percentage was for those, who were admitted to hospitals twice previously. It happened because of the patients, who were admitted to hospitals oftener than those, who just caught disease and more stable patients, who needed more time to be adapted with their cases. It also depended on the therapeutic regimen without need to be admitted to hospitals unless the disease was diagnosed. New suffering patients should acquire education about their disease and therapeutic regimen. In accordance with the job prescription, published by the Ministry of Health of Iraq, a physician is the person, who organizes first meeting with patients and provides health education to them.

Numerous studies concluded that public perceives physicians as an extremely reliable and credible source of advice and information about health behavior. Unfortunately, physicians often underestimate how powerful their role as health counselors can be. The average adult in the United States visits a physician's office more than 5 times per year. It was revealed that physicians contacted with more than 75 % of adults in the United States in any given year.

Furthermore, when patients come into clinics, they are eager to get improvement in their health. This provides further motivation for patients to adopt behavior recommended by physicians.

The study results revealed that the patients' adherence to medications was poor. The overall assessment of the patient adherence to therapeutic recommendations was fair. It means that there is a deficient in the patients' adherence to medications.

This statement is supported by Bisiriyu (2008) [18], who indicated that the levels of patient adherence to medications and the lifestyle change were only 62.6 % and 48 % respectively. The WHO reported that the patient adherence to therapeutic recommendations is a major and an important issue worldwide, and the problem of non-adherence among patients with chronic diseases is an important thing that all the health staff must be focused in.

Once the WHO published that 50 % is the average patient adherence to therapeutic recommendations in developed countries. For example, in China, the Gambia and the Seychelles Islands only 43 %, 27 % and 26 % of patients are adhere to their therapeutic regimen. In the United States, only 51 % of the patients are adhere to the prescribed treatment. In these countries non-adherence levels are related to the factors that influence and enhance patient adherence, such as personal characteristics, demographic factors, social support and economic factors [8].

Talking about the social and economic factors, the study demonstrated better results, because the majority of health services in our country provided service at a minimal cost. The patients responded that they received social intention and support from their families or even from close relatives. These had positive effect on the patients' responses abou the social and economic factors. The social and economic factors had positive effect on the overall assessment of the factors affecting patient

adherence to medications. These results are supported by Desai and Choudhry (2013) [20], who said that there is a significant effect of the economic status of patients on their adherence to the recommendations provided by the health care providers. Viswanathan et.al. (2012) [21] found out that the education, social support and economic factors of patients can affect their adherence to therapeutic recommendations.

Conclusion and Recommendations

We concluded that ischemic heart disease mostly occurred among persons in urban residential area, than in rural. Ischemic heart disease occurred in males, than in females. Ischemic heart disease mostly occurred in patients with advanced age. The patients with IHDs had a good opportunity to obtain health education about medications either from a physician or a nurse. Unfortunately, ischemic heart disease patients had fewer opportunities to continue their education. There was a deficient in the patient's adherence to medications; slight defects were with the social and economic factors, which could enhance the patient adherence to medications.

That's why, we recommend to conduct the intensive comprehensive wide population-based studies to assess the factors affecting the patients adherence to medications after the IHDs. These studies should provide suitable solutions to improve the level of patient adherence. The health education programs should be implemented to increase the patient's knowledge about importance of adherence to medications and factors that may affect their adherence, and possible solutions to solve this problem. Reinforcement should be employed, for example during home visits, visits to outpatient clinics or by telephone. These can help patients to follow their therapeutic regimen. The educational plan for ischemic heart disease patients should avoid seemingly contradictory recommendations in order to improve their adherence. The health oriented mass media approach should be employed to increase population knowledge and awareness of ischemic heart disease and importance of the patient adherence to medications. Special policies, which monitor and manage problems associated with the patient adherence to therapeutic recommendation, should be established. At last, the health oriented mass media approach should be employed to increase the health staff awareness about the policies, which should be used to improve the patient adherence to medications.

Acknowledgement

The study was hold with individual sources of funding without supported from any governmental or personal funding. We express great appreciation to Dr. Ebrahim Al-Ashure for his aid and assistance to conduct this study and deep gratitude goes to the participants for their patience.

References (список літератури)

1. Al-Jubouri M. Assessment of stressful life events of adult patients with ischemic heart disease in Baghdad City [PhD thesis]. Baghadad: University of Baghdad Publ. pp. 2–11.
2. Ngiap-Chuan T, Wei S, Seng-Lian C. Lifestyle modifications of patients with coronary heart disease on follow up in public primary care centres in Singapore: assessment of perception and behavior. *The Singapore Family Physician.* 2011;37(1):67–72.
3. Jin J, Sklar E, Sen M, Li C. Factors affecting therapeutic compliance: a review from the patient's perspective. *Ther Clin Risk Manag.* 2008;4(1):269–286.
4. Sabate E. *WHO adherence to long-term therapies evidence for action.* 6th ed. Geneva: World Health Organization, 2003. 209 p.
5. van Dulmen S, Sluijs E, van Dijk L, de Ridder D, Heerdink R, Bensing J. Patient adherence to medical treatment: a review of reviews. *BMC Health Serv Res.* 2007;7:55.
6. Osterberg L, Blaschke T. Adherence to medication. *N Engl J Med.* 2005;353(5):487–497.
7. Grahame-Smith DG, Aronson JK. *Oxford textbook of clinical pharmacology and drug therapy.* 3rd ed. USA: Oxford University Press, 2002. 641 p.
8. World Health Organization. *Adherence to long-term therapies: evidence for action*. Retrieved from: http://www.who.int/chp/knowledge/publications/adherence_report/en/
9. Sokol MC, McGuigan KA, Verbrugge RR, Epstein RS. Impact of medication adherence on hospitalization risk and healthcare cost. *Med Care.* 2005;43(6):521–530.
10. Lawson VL, Lyne PA, Harvey JN, Bundy CE. Understanding why people with type 1 diabetes do not attend for specialist advice: a qualitative analysis of the views of people with insulin-dependent diabetes who do not

attend diabetes clinic. *J Health Psychol.* 2005;10(3):409–23.

11. Kaplan RC, Bhalodkar NC, Brown EJ Jr, White J, Brown DL. Race, ethnicity, and sociocultural characteristics predict noncompliance with lipid-lowering medications. *Prev Med.* 2004;39(6):1249–55.
12. Mishra P, Hansen EH, Sabroe S, Kafle KK. Socio-economic status and adherence to tuberculosis treatment: a case-control study in a district of Nepal. *Int J Tuberc Lung Dis.* 2005;9(10):1134–9.
13. Okoro R, Ngong C. Assessment of patient's antihypertensive medication adherence level in non-comorbid hypertension in a tertiary hospital in Nigeria. *Int J Pharm Biomed Sci*. 2012;3(2):47–54.
14. Saleem F, Hassali MA, Shafie AA, Awad AG, Bashir S. Association between knowledge and drug adherence in patients with hypertension in Quetta, Pakistan. *Tropical Journal of Pharmaceutical Research*. April 2011; 10 (2): 125-132.
15. Mehta RH, Montoye CK, Faul J, Nagle DJ, Kure J, Raj E, Fattal P, et al. Enhancing quality of care for acute myocardial infarction: shifting the focus of improvement from key indicators to process of care and tool use: the American College of Cardiology Acute Myocardial Infarction Guidelines Applied in Practice Project in Michigan: Flint and Saginaw Expansion. *J Am Coll Cardiol.* 2004;43(12):2166–73.
16. Oliveira-Filho AD, Barreto-Filho JA, Neves SJ, Lyra Junior DP. Association between the 8-item Morisky Medication Adherence Scale (MMAS-8) and blood pressure control. *Arq Bras Cardiol.* 2012;99(1):649–58.
17. Iestra JA, Kromhout D, van der Schouw YT, Grobbee DE, Boshuizen HC, van Staveren WA. Effect size estimates of lifestyle and dietary changes on all-cause mortality in coronary artery disease patients: a systematic review. *Circulation.* 2005;112(6):924–3.
18. Bisiriyu G. Non-adherence to lifestyle modification recommendations (diet and exercise) amongst type 2 diabetes mellitus patients attending extension II clinic in Gaborone, Botswana [PhD thesis]. Republic of South Africa: University of Limpopo, 2008. pp. 1–3.
19. Brown JR, Malenka DJ, DeVries JT, Robb JF, Jayne JE, Friedman BJ, Hettleman BD, et al. Transient and persistent renal dysfunction are predictors of survival after percutaneous coronary intervention: insights from the Dartmouth Dynamic Registry. *Catheter Cardiovasc Interv.* 2008;72(3):347–54.
20. Desai NR, Choudhry NK. Impediments to adherence to post myocardial infarction medications. *Curr Cardiol Rep.* 2013;15(1):322.
21. Viswanathan M, Golin CE, Jones CD, Ashok M, Blalock SJ, Wines RC, Coker-Schwimmer EJ, et al. Interventions to improve adherence to self-administered medications for chronic diseases in the United States: a systematic review. *Ann Intern Med.* 2012;157(11):785–95.

(received 01.06.2014, published online 15.10.2014)

(отримано 01.06.2014, опубліковано 15.10.2014)