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EVALUATION OF THE PROGRAM FOR EARLY DETECTION OF HYPERTENSION AND TYPE 2 DIABETES MELLITUS IN PRIMARY HEALTH CARE CENTERS IN WASSIT GOVERNORATE

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ABSTRACT: *Background: Over the past decade it has been clear that the prevalence of hypertension and type 2 diabetes is increasing rapidly. Only around one half are aware of their condition and other of them have asymptomatic stage, presence of screening and diagnostic tools this make diseases suitable for early detection will improve the outcome of people with HTN and T2DM , aiming to control of both of them. Objective: To evaluate the program for early detection of HTN& T2DM in PHC centers, and compare between Primary Health Care Centers which applied the program? Subject and methods: This study was a descriptive, cross-sectional study which represents multistage sampling of 22 PHCCs in Wassit governorate, selected randomly from 44 primary health centers distributed in 6 primary health Care Sectors according to ballot technique. Results: The results showed that only (2794) clients represent 25.1% of study samples from 11140 target population within catchment areas of study centers were covered by program for early detection. Total number of +Ve patients (HTN+T2DM) in diagnostic test was (47) from total +Ve patients in screening test (542). 54.5% of study centers have a convenient place for early detection program. Good scores regarding to standard structural staff but shows that poor to acceptable scores regarding presence of doctor. The current study showed that there are clear deficiencies of all information were recording in the file of patient that have been detected by the program, Most of important poor scores for early detection program showed in current study at rural area of PHC centers. Conclusions and Recommendation: In spite of the presence of poor indicators, the early detection program services achievement in wassit governorate was acceptable according to the guideline of Iraqi MOH indicators. There is no application for referral and feedback system regarding program's patients. The current study showed clear deficiency in total information required in early detection records and patients file and there is clear deficiency in different testing for patients that detection by program (laboratory test, ECG, X-ray). Through effective health education, patients can learn primary and secondary prevention strategies, decrease their risk status and make better lifestyle choices in order to optimize their health and wellbeing.*

KEYWORDS: Diabetes, Hypertension, Iraq

INTRODUCTION

Evaluation of the Program for Early Detection of High blood pressure, hypertension (HTN) and Type 2 Diabetes Mellitus (T2DM) are important components of a program and are critical to sound strategic planning. Monitoring refers to the simple description, counting, and tracking of processes or events. Evaluation of program requires identification of different indicators; these indicators

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would measure inputs, process, outputs, and outcomes. The program, it is envisaged in providing preventive, promotive, curative, and supportive services (core and integrated services). [1,2], Non-Communicable Diseases(NCD) are a major public health problem which causes these diseases vast majority of deaths, especially heart disease, vascular and diabetes, in addition caused the burden for socio-economic development, especially for development countries, such as Iraq.[3] , NCD are chronic in nature, and can't be cured completely, but the existing evidence indicates that these diseases are largely preventable by means of effective interventions that tackle their shared contributory risk factors and the underlying social determinants. In addition, the early detection and proper management of these diseases lead to reduced morbidity and premature deaths and to improve quality of life.[3]

Hypertension: High blood pressure (hypertension) is one of the most important causes of premature death worldwide and the problem is growing; The number of people living with hypertension (high blood pressure) is predicted to be 1.56 billion Globally by the year 2025.[4], In 2011-2012 in the US, about a third of all people over the age of 18 years had HTN.[5] , nearly one billion people have high blood pressure (hypertension); which kills nearly 8 million people every year [6]. Control of hypertension has become a key national priority in the US as part of the Million Hearts initiative from the Department of Health and Human Services, which aims to prevent 1 million heart attacks and strokes in the US by 2017.[7]

Diabetes mellitus: Diabetes mellitus (DM) is considered as one of the major health problems globally. **Iraq** is one of the 19 countries and territories of the IDF, MENA region. 415 million people have diabetes in the world and more than 35.4 million people in the MENA Region; by 2040 this will rise to 72.1 million. There were 1.2 million cases of diabetes in Iraq in 2015. [8] That's about 1 out of every 11 people have diabetes and 1out 4 do not know if they have diabetes, 86 million people more than 1 out of 3 adults have prediabetes, 9 do not know they out of 10 have prediabetes , Without weight loss and moderate physical activity 15–30% of people with prediabetes will develop type 2 diabetes within 5 years[9]. Chronic Non-Communicable Diseases Risk Factors Survey in Iraq at 2015 by Ministry of Health, directorate of public health and primary health care show that the estimated prevalence of High blood pressure (hypertension) and type two diabetes (T2DM) among adult population (18-65 years) was:

- High blood pressure (hypertension) :(systolic blood pressure 140 or more and/or Diastolic blood pressure 90 or more) is 35.6% respectively, being higher among men (36.5%) than women (34.5%).
- High level glycaemia (Hyperglycemia): (fasting blood glucose 7mmol/L or higher) is 13.9% respectively, being higher among men.
- One third of high blood pressure and half with diabetes are unknown of their condition.[10]

Objective of the study: To evaluate the program for early detection of HTN& T2DM in PHC centers and to compare between PHC centers which applied the program?

Subject and methods: Study Design: A cross-sectional study conducted at 22 randomly selected primary health care centers (PHCCs) in Wassit Governorate/ Iraq.

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Duration of Study: The data collection starting from 1th of November-2016 till 22th January – 2017. The time sequence of data collection was 1 day per center and as average 4 day per week, 4 hours per day (9 A.M to 1 P.M).

Place of Study: The place of study were in 22 primary health centers in Wassit governorate. Kut city center of Wassit governorate about 180 Km. south of the Baghdad city (capital of Iraq)

Sampling Technique: The total number of main primary health care centers in Wassit governorate was 44 PHCCs distributed in 6 sectors. 22 centers (50% from total) were selected randomly by a multistage sampling technique from all sectors then take simple random sampling from each sector according to ballot technique**.**

Data Collection and Checklist Form: The data was collected by Department of NCD checklist developed by Iraqi MOH and modified by researcher and his supervisor and 14 experts. Which contain assessment standards for unit of program in PHC centers including; medical unit, evaluating indicators to assessment all requirement, performance, structure, staff for early detection program.

Statistical Analysis: Data were presented in simple measures of frequency, percentage, mean, standard deviation, and range (minimum-maximum values). The significance of difference of different percentages (qualitative data) was tested using Pearson Chi-square test (χ^2-test) with application of Yate's correction or Fisher Exact test whenever applicable. Statistical significance was considered whenever the P value was equal or less than 0.05.

RESULTS

The number of clients' coverage by program: Table 1 showed that (2476) clients were covered by early detection program from (11140) target population above 20 years within catchment areas of study centers. Total number of +Ve patients (HTN+DM2) in diagnostic test was (47) from total +Ve patients in screening test (542). While e the total number of -Ve clients (HTN+T2DM) in screening test were (2252).

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Table 1 The Number of Target Clients that Coverage by Program

Variables	Total	Mean±SD	Mode	Median	Range
The total number of target clients within catchment area above 20 years monthly	**11140**	**506.36**±312.98	46	482	**46-1239**
The total number of target clients covered by the program early detection of hypertension and diabetes monthly	**2476**	**112.55**±73.24	30	99	20-281
Number of +ve HTN clients in the screening test	388	17.64±19.31	8	16	1-89
Number of +ve T2DM clients in the screening test	154	7.00±7.34	2	5	0-30
Number of -ve HTN clients in the screening test	1791	81.41±54.85	109	81	0-196
Number of -ve T2DM clients in the screening test	461	20.95±22.58	9	11	0-94
Number of +ve HTN clients in the diagnostic test	**27**	1.23±2.41	0	0	0-11
Number of +ve T2DM clients in the diagnostic test	**20**	0.91±1.31	0	0	0-5
Number of -ve HTN clients in the diagnostic test	**19**	0.86±1.93	0	0	0-7
Number of -ve T2DM clients in the diagnostic test	**14**	0.64±1.71	0	0	0-7
Number of unknown clients in the screening test	**485**	**22.05**±22.68	4	17	0-103

According to Structure Indicators

Main poor score regarding structure indicators were 31.8% of study centers have no adequate place for program, 50% have no health promoting poster to prevent high blood pressure, 100% of study centers have poor score for presence the feedback nutrition for referring patient and 82% for rottenly training session for medical staff every six months. While main acceptable score were in 36.4% of study centers for log documentation of records and 22.7% for rottenly training of health staff or nursing each session every six months. The highest percentage of good score was 90.9% regarding provides cards for laboratory testing request. (Table 2)

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Table 2 Evaluation Scoring for Early Detection Program of HTN & T2DM According to Structure Indicators

Variables	Score0 (Poor) (<50%)		Score1 (Acceptable) (50-74%)		Score2 (Good) (>=75%)	
	NO.	%	NO.	%	NO.	%
Provides a convenient place for the program	7	31.8	3	13.6	12	54.5
Presence of early detection checklist in ticket unit	3	13.6			19	86.4
Provides cards for laboratory testing request	2	9.1	-	-	20	90.9
Availability of health promoting poster to help prevent high blood pressure and diabetes	11	50.0	8	36.4	3	13.6
Working with referral forms developed by Iraqi MOH in the case of an assignment of patients	7	31.8	-	-	15	68.2
The presence of the guideline working special for pressure and diabetes	8	36.4	-	-	14	63.6
Log documentation of records	5	22.7	8	36.4	9	40.9
Rottenly training session for medical staff every six months	18	82	2	9	2	9
Rottenly training of health staff or nursing each session every six months	7	31.8	5	22.7	10	45.5

Evaluation Score for Early Detection Program for HTN & T2DM According to Staff and Medical Equipment: Regarding the structural standard staff of program, the highest and lowest percentage of good score were 100%, 13.6% for provides early detection record in the unit, The presence of patient bed with a ladder climb patient respectively .While the highest and lowest percentage of acceptable score were 63.6%, 4.5% for presence of stethoscope, provides coach computerized program data entry respectively. Whereas the highest and lowest percentage of poor score were 68%, 9.1 % for provides ECG device inside the center, The presence of stethoscope respectively.(Table 3)

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Table 3 Evaluation Score for Early Detection Program of HTN & T2DM According to Man Power and Medical Equipment.

Variables	Score0 (Poor) (<50%)		Score1 (Acceptable) (50-74%)		Score2 (Good) (>=75%)	
	NO.	%	NO.	%	NO.	%
Structural standard staff of program consist from nursing a single + staff womanly one	-	-	10	45.5	12	54.5
The presence of a private doctor for program or within the Center for the giving initial treatment for patients	4	18.2	-	-	18	81.8
Provides coach computerized program data entry	14	63.6	1	4.5	7	31.8
Presence of two mercury (standard cuff) sphygmomanometer and working well	-	-	13	59.1	9	40.9
Presence of stethoscope	2	9.1	14	63.6	6	27.3
The presence of patient bed with a ladder climb patient	12	54.5	7	31.8	3	13.6
Provide sufficient number of chairs for resting clients.	6	27.3	4	18.2	12	54.5
Provides early detection record in the unit.	-	-	-	-	22	100
Provides the weigh measuring (platform balance)	9	40.9	-	-	13	59.1
Provides a length measuring tape	9	40.9	-	-	13	59.1
Availability the diabetes checking (Glucose check Meter) in case of emergency	4	18.2	-	-	18	81.8
Provides ECG device inside the center	15	68.2	-	-	7	31.8
Provides X-ray device inside the center	14	63.6	-	-	8	36.4

Evaluation Scoring for Early Detection Program of HTN & T2DM According to Data Entry:
Table 4 showed that main indicators that have poor scores were 100% for insert information for patient detection by diagnostic test in computerized daily or weekly, 90.9% of study centers for installation of signs and symptoms and complication in the file of the patient, 50% of study centers for measuring weight, height and BMI for patients and installing the clinical examination and treatment of the patient's in the file by a physician ,59.1% for installing the previous medical history and family history in the file of the patient and 27.3% of study centers for installing the type of physical activities in the file of the patient and installing the type of the food in the file of the patient .

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Table 4 Evaluation Scoring for Early Detection Program of HTN & T2DM According to Data Entry

Variables	Score0 (Poor) (<50%)		Score1 (Acceptable) (50-74%)		Score2 (Good) (>=75%)	
	NO.	%	NO.	%	NO.	%
File is opened for each patient detected by diagnostic test	9	40.9	5	22.7	8	36.4
Measuring weight, height and BMI for patients ?	11	50.0	10	45.5	1	4.5
Installing the type of physical activities in the file of the patient	6	27.3	3	13.6	13	59.1
Installing the type of the food in the file of the patient	6	27.3	10	45.5	6	27.3
Installing the previous medical history and family history in the file of the patient	13	59.1	4	18.2	5	22.7
Install medication history in the file of the patient	15	68.2	-	-	7	31.8
Installation of signs and symptoms and complication in the file of the patient	20	90.9	2	9.1	-	-
Install Notes and the signature of the doctor in the file of the patient	7	31.8	9	40.9	6	27.3
Filling all patient information in the file by the health or nursing staff	4	18.2	5	22.7	13	59.1
Installing the clinical examination and treatment of the patient's in the file by a physician	11	50.0	5	22.7	6	27.3
Insert information for patient detection by diagnostic test in Computerized daily or weekly	22	100	-	-	-	-
Matching the number of registered master record, with the number of registered in the early detection of record	8	36.4	-	-	14	63.6
Matching diagnostic test is documented in the project record with drum patients	12	54.5	3	13.6	7	31.8

Distribution of Evaluating (Acceptable and Poor) Score, According to Name of Sector, Class and Residence: The highest percentage of poor (<56) evaluating score is 100% for Al-Saouria sector, while the highest percentage of acceptable (56-83) evaluating score is 100% for Al-Numaniya and Al-Azizia sectors. There is not statistically significant between evaluating score and type of centers (PV=0.731), while there is significant difference between evaluating score and residence of centers (PV= 0.04). (Table 5)

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Table 5 Distribution of Evaluating (Acceptable and Poor) Score, According to Name of Sector, Class and Residence.

		Poor (<56)		Acceptable (56-83)		P value
		No.	%	No.	%	
Name sector	First Al-Kut Sector	1	16.7	5	83.3	0.068
	Second Al-Kut Sector	4	66.7	2	33.3	
	Al-Numaniya Sector	-	-	1	100	
	Al-Hayee Sector	1	33.3	2	66.7	
	Al-Azizia Sector	-	-	3	100	
	Al-Saouria Sector	3	100	-	-	
Class	Class A	5	50.0	5	50.0	0.731
	Class B	3	33.3	6	66.7	
	Class C	1	33.3	2	66.7	
Residence	Urban	5	29.4	12	70.6	
	Rural	4	80.0	1	20.0	0.043*

DISCUSSION

The Target of Clients Covered by Program: Total number of target population above 20 years age including by early detection program according to catchments areas of all study centers are (11140) and only (2794) clients represent 25.1% of study samples were covered by program for early detection .This results is higher than what had been reported by Fayad 2012 in Babylon was (8.2%) [11]. Average percentage of positive HTN and T2DM clients of screening tests are (542) represent (19.40%) from total of target clients covered by program. Is different from those of (Fayad 2012 in Babylon, AL-Khazrajy in Baghdad 2014, and Jihad, Najaf 2014) who found that the percentage was (14.35%), (17.87%) and (16%) respectively. [11, 12, 13] high percentage of unknown clients in screening test in current study was (89.48%) and these results are similar to those of Fayad 2012 in Babylon and AL-Khazrajy 2012 in Baghdad was (66.20%) and (50.2%) [11, 12]**. structure indicators:** The current study show that the number of PHC centers where there is a convenient place for the program is 12 centers from 22 centers represent (54.5%) and 7 centers do not have was represent (31.8%) These results were similar to what had been reported Fayad 2012 in Babylon who recorded that 57.14% had no convenient place for early detection program.[11],

Staff and Medical Regarding: The current study show that there are good indicators regarding to standard structural staff that consist from two health or nursing staff (man and women staff) but shows that poor to acceptable scores regarding presence of doctor. these results are Similar to

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those of Al-Khudhairi in Iraq 2005 and AL-Awadii 2016 who found that misdistribution indicators in medical staff for early detection program. [14, 15] And Fayad 2012 showed that poor scores for ten health centers, acceptable scores for two and good only for two centers about presence of medical structural staff.[11] These results were similar to what had been reported ALatabii 2012 Showed the weak presence of medical and nursing staff in Jordan , Kuwait , Syria.[16]

Data Entry: In the present study, there are clear deficiency of all information were recording in the file of patient that have been detected by the program such as measuring weight, height and BMI, installing the type of physical activities, type of the food, medical history, family history, medication history, signs, symptoms, complication, clinical examination, treatment, notes and the signature of the doctor in the file of the patient. The results of current study agree with results of Fayad 2012 in the Babylon was general and behavioral information 64.9%, drug history, complication target organ 65% and assessment summary 47%.[11]

Regarding of Residence: Most of important poor scores for early detection program showed in this study at rural area of PHC centers in Wassit governorate and most of PHCS of south governorate suffering from this problems reported by AL-Taha 2000 in Basra that estimated the number of doctors was poor in most of Basra HCs. [17]. And disagree with results of AL-Khudhairi 2005, which showed that mean number of doctors in Baghdad HCs was 4 per center. [14] .There are clear deficiencies for the presence of paramedical staff showed in current study. These results were similar to what has been reported of Fayad 2012 in Babylon that showed the adequacy rate for paramedical staff was poor in most health centers. And this results disagree with results of Al-Taha 2000 in Basra that showed good available of assistant staff in Basra HCs. [17], Most PHC centers in Wassit governorates served a large number of populations within catchments areas and most of these PHCs represent class A, therefore there are high poor scores for early detection program were present in class A centers. These results were similar to what has been reported of Fayad 2012 in PHCs Babylon that showed some centers was no availability for private place for examination and no sufficient number of rooms. [11]. And differs from that of Assaf in USA evaluates the early detection program quality and also had excellent percentage reported by WHO Quality Guidelines [18]

CONCLUSIONS

From the present study, the following conclusions were obtained;

In spite of the presence of poor indicators, the early detection program services achievement in wassit governorate was acceptable according to the guideline of Iraqi MOH indicators. Acceptable evaluating percentage for early detection program in urban centers, while poor evaluating percentage for rural centers in wassit governorate. More than quarter of clients (20 years and older) were covered by early detection program and more than (19.4%) of clients with HTN and T2DM detected by program. While 89.5% of PHCCs clients were loss of follow up to confirm diagnosis. The current study showed clear deficiency in total information required in early detection records and patients file.

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RECOMMENDATIONS

The study recommends the following:
The current study suggested to made active plans to following of dropout patients such as home visit, call reminder and SMS message., The current study suggest to make all diagnostic tests , checking and essential drugs free to all early detection program's clients to encourage them to visit PHC centers and return to follows., The current study suggest make special pamphlet for education methods and free distribution to patients that detected by program for better communication with the patients., Through effective patient education, patients can learn primary and secondary prevention strategies, decrease their risk status and make better lifestyle choices in order to optimize their health and wellbeing.

REFERENCES

1. World Health Organization. *Final Narrative Report IRFFI/UNDG IRAQ Trust Fund (UNDG ITF); Emergency Public Health Assistance to Iraq: Strengthening Non-Communicable Diseases and Mental Health Control and Prevention Programme* , Iraq/Ministry of Health (MOH): Atlas Project Number: 66886.2008 (mptf.undp.org/document/download/9620).
2. Krishnan A., Gupta V., Amarchand R., Nongkynrih B.'How to Effectively Monitor and Evaluate NCD Programmes in India', *Indian Journal of Community Medicine, Universal coverage and Noncommunicable Diseases Supported by WHO Country Office for India,*2001, Vol 36, pp. 0970-0218, https://www.researchgate.net/publication/225044773.
3. Shanthi M., Oleg Chestnov D., Bettcher; et. al., WHO, Prevention and Control of Non-communicable Diseases: Guidelines for primary health care in low resource settings, (2012).
4. Piper MA, Evans CV, Burda, BU, Margolis KL, O'Connor E, Smith N, et. al., Screening for High Blood Pressure in Adults: A Systematic Evidence Review for the U.S. Preventive Services Task Force. Evidence Synthesis No. 121. AHRQ Publication No. 13-05194-EF-1. Rockville, MD: Agency for Healthcare Research and Quality, (2014).
5. Nwankwo T, Yoon SS, Burt V, Gu Q. 'Hypertension Among Adults in the United States: National Health and Nutrition Examination Survey, 2011–2012', *(NCHS) MD: National Center for Health Statistics,* (No. 133);2013.
6. World Health Organization. *Hypertension fact sheet*, Department of Sustainable Development andHealthyEnvironments;2011(http://www.searo.who.int/entity/noncommunicable_diseases/media/non_communicable_diseases_hypertension_fs.pdf).
7. Wolff T, Miller T., Evidence for the reaffirmation of the U.S. Preventive Services Task Force recommendation on screening for high blood pressure. Ann Intern Med. 2007; 147:787-91, (2007).
8. Iraqi Diabetes Association., International Diabetes Federation., (2015). http://www.idf.org/membership/mena/iraq (2015).

Print ISSN: ISSN 2053-406X(Print), Online ISSN: ISSN 2053-4078(Online)

9. National Center for Chronic Disease Prevention. *National Diabetes Statistics Report, Estimates of Diabetes and Its Burden in the United States; Diagnosed and undiagnosed diabetes among people aged 20 years or older, United States,* : CDC-INFO Contact Center; 2014.
10. Ministry of Health-Iraq, WHO, Chronic Non-communicable diseases risk factors survey in Iraq at 2015. WHO, (2015).
11. Fayad A-M. *"Evaluation of the program for early detection of hypertension and diabetes mellitus type 2 in Babylon governorate*", PHD research for family medicine, Al Mustansiriya University: Baghdad, College of Medicine; 2012.
12. AL-Khazrajy L., kamil H., "Evaluation of early detection program of hypertension and diabetes mellitus at Al-Karkh sector for Primary Health Care\Baghdad', International Journal of Community and Cooperative Studies; 2014, Vol.1(No.1), pp. 1-14,September 2014, Published by European Centre for Research Training and Development UK (www.ea-journals.org).
13. Jihad T. *"Assessment of Outcome of Screening Program for Hypertension and Diabetes at Primary Health Care Level, Najaf 2014*", Higher Diploma research for Field of Epidemiology, Baghdad University, College of Medicine; 2014 .
14. AL-Khudhairi JM. Evaluation of Primary Health Care System as A Prerequisite for Iraq Health System Reform. Thesis (PhD).Al Mustansiriya University: 2005.
15. Al-Awadii A., Evaluation of Application of Quality Improvement Program among A Samples of PHC Centers in Thi-Qar Governorate. Thesis (MS.) Collage of Health and Medical Technologies. Baghdad; (2016).
16. ALatabii Z, Ahmed E. Measuring Patient Satisfaction and The Quality of Health Care: A Study of health centers in Jordan, Journal of Medical Systems, Vol (28), No (6).2012.
17. Al-Taha MA., Evaluation of structure process and outcome of maternal Health services at district level in Basra 2000 PHD thesis. University of Basra; (2000).
18. Al-Assaf A. F., Sheikh M. "*Quality improvement in primary health care: a practical guide*", Egypt: World Health Organization, Regional Office for the Eastern Mediterranean.; 2004.P. 334.

Print ISSN: ISSN 2053-406X(Print), Online ISSN: ISSN 2053-4078(Online)