

## Role of Health Check-Ups in Non-Communicable Diseases' Detection at Primary Health Care

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### ABSTRACT

Uzbekistan has been conducting the pioneering health care reform activities for the last 15 years. One of the main aims of the reform was creating accessible and quality primary health care (PHC) services. In first years of the reform the attention was paid to prevention of infectious diseases and maternal and child health issues currently the focus has shifted to prevention of non-communicable diseases (NCD). While country has building a national strategy to combat NCD Navoi Regional Health Administration (NOHA) has implemented a study to reveal a true frequency of NCD in region that might be applicable for whole country. The purpose of the research was to conduct basic health check-up at the 4 rural Primary Health Care (PHC) facilities in Navoi region and timely detect non - communicable diseases, with special emphasis on the diabetes mellitus. In general, the quantity of NCD increased for 1012 new (24,6%) cases. According the diabetes mellitus, it was detected that 35 people were registered as "D" category of chronic patients and received appropriate care. In the frame of the health check-up there were 24 new cases detected, the total number of patients with diabetes mellitus is 59 people. This exceeded the available rates of DM in 1,7 times. Our results are comparable with NCD situation in other countries developed and non-developed as well. There was high number of people with hidden forms and higher risks for the DM development. Mass screening of our rural population in the PHC facilities has confirmed that the global DM incidence tendencies are true for our population as well

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## 1. INTRODUCTION

Main causes for the development of non-communicable diseases (NCD) are unhealthy life styles, not balanced nutrition, stress factors and harmful habits. Currently, non-communicable diseases such as obesity, atherosclerosis, hypertension, myocardial infarctions and stroke, oncological diseases, diabetes and chronic respiratory diseases cause 63% of the death cases in the world. Annually, 9 million people under 60 years old die in the world because of NCD [1]-[6]. Obesity and type II diabetes mellitus (DM) are admitted by the World Health Organization (WHO) as non-infectious epidemics of the present, considering its high prevalence in population, the high risk for the cardio-vascular diseases, early development of the disabilities and untimely death [7]-[11]. According the WHO, about 30% of the world's population is overweight. From

them 16.8% are women and 14.9% are men. Amount of the obese people progressively increases every decade for 10% [12]-[16]. The current research was conducted in the frame of the technical cooperation project of Navoi Health Care Administration and Japan International Cooperation Agency (JICA), there were 4 pilot Primary Health Care (PHC) facilities in Navoi Region.

The purpose of the research was to conduct basic health check-up at the 4 rural Primary Health Care (PHC) facilities in Navoi region and timely detect non - communicable diseases, with special emphasis on the diabetes mellitus. Objectives of the research were:

- To conduct the health check-up of the population;
- To clarify frequency of NCDs, including the incidence of new cases among the people served by PHC facility;
- To detect the risk groups among the population in the catchment area of PHC facility.

## 2. RESEARCH METHOD

There were 14045 people served by four PHC facilities in Navoi region of Republic of Uzbekistan. All people were older than 20 years old, 7579 people were called to participate in the check –up, only 6852 (90.4%) actually attended. Among them men – 3042 (44.4%), women 3810 (55.6%).

**Table 1. Health check-up population data**

Name of the PHC facility	Number of people served by PHC	Number of people older 20 year old	Quantity of people went through health check absolute number (%)	Men Absolute number (%)	Women Absolute number (%)
Karmana Ibn Sino	4944	2384	2017(84.6%)	704(34.9%)	1313(65%)
Nurata Gazgan	3173	1701	1638(96.3%)	818(49.9%)	820(50.1%)
Nurata Alisher Navoi	2850	1629	1547(94.9%)	760(49.3%)	787(50.7%)
Karmana Pakhtabad	3078	1865	1650(90.4%)	761(46.1%)	890(53.9%)
Total	14045	7579	6852(90.4%)	3042(44.4%)	3810(55.6%)

Health check-ups included: anthropometric measurements (height, weight, waist circumference), calculation of BMI, urine sugar test using urine test strip “Urighlyuk”, in the positive cases additional blood sugar test, consultation of the doctor, if needed the blood formula, urine test, ECG. The special health record form was filled for each patient. The health check-up was conducted explaining to each patient the purpose of the activity and obtaining the informed consent.

High percentage of newly detected cases was a result of activities of working group of the regional health care administration. Implementation of health check-up and data inserting into data base was monitored weekly (Figure 2). The health check-up implementation quality was ensured by the PHC staff who conducted examinations with the great level of responsibility.

Approximately, we were aiming to identify a group of people with newly detected cases and detection of people with high risk of disease development in the future.

With this certain purpose the following seven indicators of risk were developed:

1. Women > 65 years old;
2. Men > 55 years old;
3. Bad habits: smoking, alcohol abuse;
4. Inherited diseases: Diabetes Mellitus, Ischemic heart disease, hypertension;
5. Abdominal obesity: waist circumference  $\geq 94$  sm (for men) and  $\geq 88$  sm (for women);
6. BMI more then 26;
7. Fasting blood sugar 5,6-6,9 mmol/l.

If for clarifying diagnosis there was a need in additional examination, then consultations of the specialists were conducted. For this purpose, patients were sent to the district level health care facilities. The data was collected and stored in the adopted to the study purposes software (1 C) and analyzed at the Microsoft Excel 2007.

Data on the health condition of patients collected in the health check-up (complaints, anamnesis, data of the health examination, recommendations on the following tests and examinations, the preliminary and final diagnosis) were reflected in the health check-up form and in the electronic form in the computer.

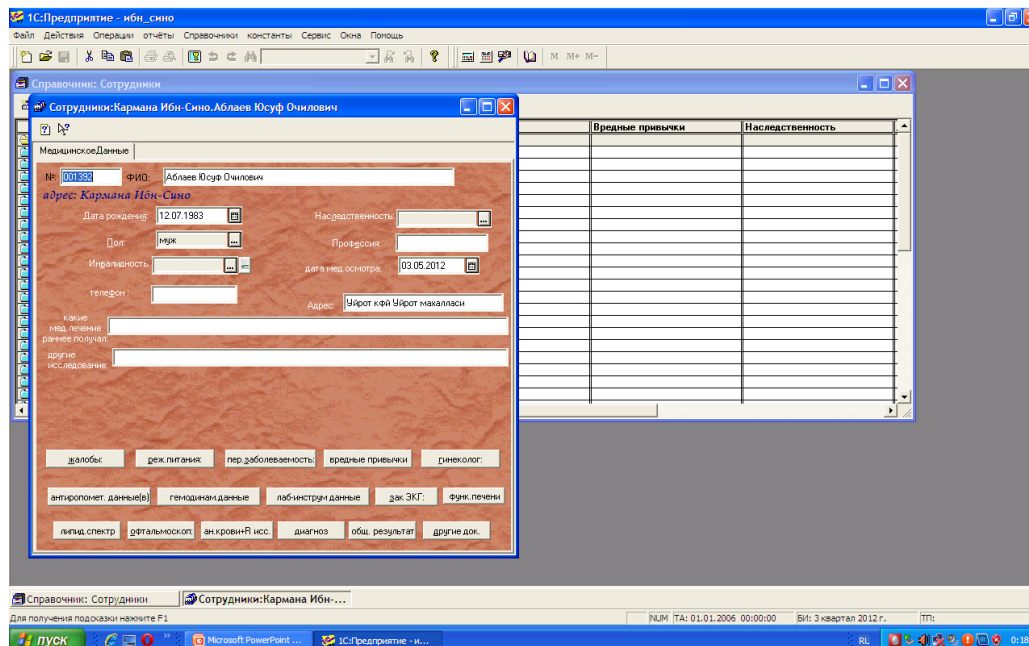


Figure 1. Program 1C for inserting and data storage

### 3. RESULTS AND ANALYSIS

Based on the results of the health check-up we have detected that part of the people attended the health check-up are practically healthy, there are chronic patients that have been already registered and patients with newly detected disease, the third group are people with high risk for the disease development.

Table 2. Distribution of population based on the health condition

Number of people attended the health check-up	Average age	1 group Number (%)	2 group Number (%)	3 group Number (%)
6852	37,9±14	1614(23,6%)	4112(60%)	1126(16,4%)

- 1st group: practically healthy people, do not need follow-up, they were provided only healthy life promotion session – 1614 people (23,6%).
- 2<sup>nd</sup> group: people who have revealed some kind of pathological change and need in additional examination to clarify diagnosis and provision of outpatient or inpatient treatment – 4112 people (60%).
- 3<sup>rd</sup> group: people who have a highest risk for the development of some diseases, they need in preventative interventions and constant medical observation – 1126 people (16,4%).

There are practically healthy people in the first group, whose BMI was not more then 25, non-smokers, who have a healthy life style - 1614 people (23,9%, 874 women). In general they were young people – 1368 people (84,7 %, 736 men and 632 women), middle age – 221 people (13,7%, 124 men and 97 women), retired age – 21 people, (1,3%, men -12 и women - 9), senior age – 4 (0,2%, man 1, women -3) It was noticed that the quantity of the healthy people decreased in the direct proportion with age, the majority of the healthy people were young. In terms of gender we have not noticed any significant difference. In the second group there were people, who had already a disease and those who were diagnosed some kind of the pathology. In this group, there were 4112 people, 60% of the checked (of whom 1261 were men, and there were 2851 women). There were 2511 young people, 55,7 % , (601 men, and 1910 women), people in the middle age – 1110 people, 27%, among them (424 men and 686 women), retired – 363, 8,8% (171 men and 192 women) and oldest people 128, 3,1%, (men-65, women -63). In comparison with the 1<sup>st</sup> group it is clear that number of young people decreased for 30%, and indeed the number of people of the middle, old and senior age increased.

According the health check-up the disease structure found in the 2<sup>nd</sup> group had the following composition:

**Table 3. Number of patients firstly detected**

Disease	Number of patients detected (%)
anemia	1124 people (16,4%)
hypertension	224 people (0,03%)
ischemic heart disease	73 people (0,01%)
diabetes mellitus	59 (0,008%)
ulcer	43(0,006%)
asthma	29(0,004%)
chronic bronchitis	28(0,004%)
rheumatism	24(0,003%)

In the frame of the health check-up, we found that the results of the patients who had been registered with chronic disease for the dispensary care (the “D” category) for the different diseases was in the range from 8 to 34%. Results are shown in the Table 3.

There were 1126 people with higher for NCD development in the group 16,4% (992 men, 134 women), 201 of them had increased BMI (Figure 3), increased BP – 134 people (105 women and 29 men), smokers 680 people (665 men and 15 women), daily or weekly takers of alcohol – 111 people (111 men).

**Table 4. Proportion of the patients with diseases that were registered before and with new detected cases**

Name of PHC facility	Total Obesity	"D" Absolute number (%)	New cases Absolute number (%)	Total with IHD	"D" Absolute number (%)	New cases Absolute number (%)	Total with HB	"D" Absolute number (%)	New cases Absolute number (%)
Karmana "Ibn Sino"	721	650 (90,1%)	71 (0,09%)	18	17 (94,4%)	1 (0,05%)	39	32 (0,82%)	7 (0,18%)
Nurata, "Gazgan"	247	0 (0%)	247 (100%)	2	2 (100%)	0(0%)	69	3 (0,04%)	66 (97%)
Nurata "Alisher Navoi"	237	144 (60,7%)	83 (35%)	16	11 (68,7%)	5 (31,2%)	153	114 (74,5%)	39 (25,5%)
Karmana "Pakhtabadd"	619	596 (96,3%)	23 (3,7%)	37	37 (100%)	0 (0%)	63	63 (100%)	0 (0%)
Total for 4 PHC facilities	1824	1390 (76,2%)	414 (22,7%)	73	67 (91,8%)	6 (8,2%)	324	212 (65,4%)	112 (34,6%)

In general, the quantity of NCD increased for 1012 new (24,6%) cases. According the diabetes mellitus, it was detected that 35 people were registered as “D” category of chronic patients and received appropriate care. In the frame of the health check-up there were 24 new cases detected, the total number of patients with diabetes mellitus is 59 people. This exceeded the available rates of DM in 1,7 times (Table 4) Our results are comparable with NCD situation in other countries developed and non-developed as well.

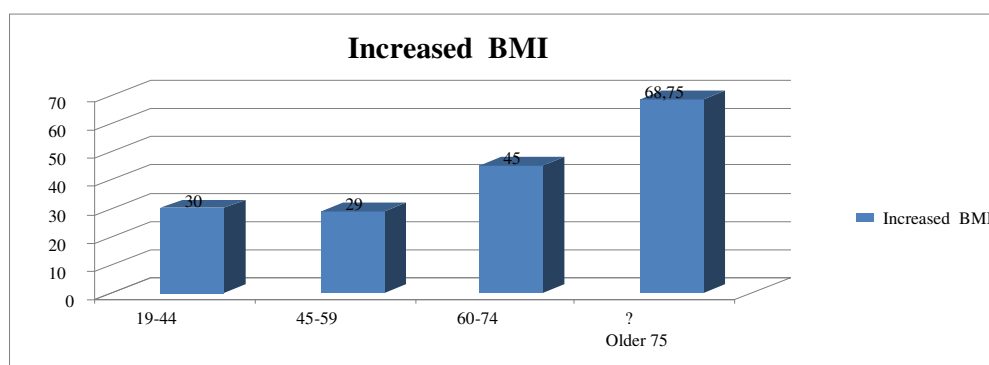
Globally, among the death causes, DM is on the 3<sup>rd</sup> place after cardio-vascular and oncology diseases. It is known that before clinical onset of the diabetes mellitus there is a long period of the development of abnormalities that in the long term lead to the clinical symptoms (increased appetites, thirstiness, polyuria, decrease of the body mass, inflammatory and purulent diseases of skin and other symptoms) [17]-[21]. In last 35 years there is a sharp decrease in the incidence of the diabetes mellitus (however, there is a higher number of patients with hidden forms of the disease then with manifested. [22]-[26].

We clearly detected that there is high number of people with hidden forms and higher risks for the DM development. Mass screening of our rural population in the PHC facilities has confirmed that the global DM incidence tendencies are true for our population as well.

**Table 5. Percentage of the registered before and newly detected patients with Diabetes Mellitus**

Name Of Phc Facility	Dm (Absolute Number)	"D" Dispansery Patients (Registered Previously With Dm) Absolute Number (%)	Newly Detected Cases With Dm Absolute Number (%)
Karmana, "Ibn Sino"	28	19(67,8%)	9(32,2%)
Nurata, "Gazgan"	12	6(50%)	6(50%)
Nurata, "Alisher Navoi"	8	2(25%)	6(75%)
Karmana "Pakhtaabad"	11	8(72,7%)	3(27,3%)
Total for 4 PHC facilities	59	35(59,3%)	24(40,7%)

We have to admit that to detect diabetes mellitus the "Urigrlyuk" urine test strip was used for all people attended the health check-up. If there were no specific complaints and clinical symptoms, the test results were a basis for the further examination. If urine test was positive, these patients received blood sugar test, and if it is positive they were referred to the endocrinologist for consultation and correction of sugar, and registering as "D" dispensary follow up chronic patients.

**Figure 2. Age distribution of population with increased BMI**

#### 4. CONCLUSION

We clearly detected that there is high number of people with hidden forms and higher risks for the DM development. Mass screening of our rural population in the PHC facilities has confirmed that the global DM incidence tendencies are true for our population as well

There is a need to pay attention has to aged people with increased BMI. We consider this group as main, we would like to register these people as "D" category of patients, who will be receiving the constant follow-up and will be a target group for the health promotion activities to prevent NCD and its consequences. There is a further plan to expand health check-up activities to 28 additional PHC facilities in Navoi Region and strengthen capacity of health care providers prevent and early detect NCD in order to decrease related to them morbidity and mortality.

It is planned for 2013-2014 to introduce the current scheme in all districts of Navoi region.

We hope that results and timely implemented prevention measures will support to make population of Navoi region healthier. Thus, the health check up in the primary health care setting conducted by PHC personnel allows accurately reflect the health condition of population and it is one of the basic activity that allow to elaborate prevention measures and timely treatment of non-communicable diseases.

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