

Role of Master Health Check-up Clinic of Imperial Hospital Limited for Early Detection of Diseases in Chattogram; A Retrospective Study

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ABSTRACT

Background: The preventive health check-up can be implemented to the large population then the health status of general people will be updated and the burden of the patient in the hospital will be reduced, the cost of treatment for the people will be reduced. The rate of mortality of middle-aged people will be reduced and the rate of development of sudden disability due to some diseases will be reduced.

Objectives: The main aim of this study is to synthesize the evidence on role of Master health check-up among the people.

Methods: This study was conducted as a retrospective study on a total of 764 patients who did Whole body check-up at the Imperial Hospital Limited during September 2019 to August 2021. Patients who were apparently healthy individuals and patients with known medical conditions without significant symptoms. Both male and female patients had included. Statistical analyses of the results were obtained by using window-based Microsoft Excel and Statistical Packages for Social Sciences (SPSS-24).

Result: In the study population, 32.85% had Diabetes, 39.40% had hypertension, 15.45% had IHD, 19.11% had dyslipidemia, 5.63% had Fatty liver, 4.06% had hypothyroidism, 2.23% had Hyperuricemia, 0.52% had GSD. Out of 227 female patients, 0.44% had breast lump, out of 537 male patients, 7.45% had BHP. The newly detected diseases in asymptomatic individuals were: Diabetes 3.90%, HTN 17.28%, IHD 9.29%, Dyslipidemia 11.33%, Fatty liver 2.77%, Hypothyroidism 2.05%, Hyperuricemia 1.47%, GSD 0.39%, Breast Lump 1.33%, BHP 10.15%.

Conclusion: It is evident that there is significant role of Master health check-up among the younger people, as in this study there are significant number of disease states were newly identified by preventive health checkup in case of 31 to 60 years old people.

Keywords: Preventive health care, Diabetes, Hypertension, Gall Stone Disease, Benign Hypertrophy of Prostate.

I. Introduction

The concept of prevention is best defined in the context of levels, traditionally called primary, secondary and tertiary prevention. Another level, called primordial prevention, was later added. [1] Primordial prevention consists of actions and measures that inhibit the emergence of risk factors in the form of environmental, economic, social, and behavioral conditions and cultural patterns of living etc. (for example, smoking, eating patterns, physical exercise). Primary prevention can be defined as the action taken prior to the onset of disease, which removes the possibility that the disease will ever occur. [2] Primary prevention may be accomplished by measures of "Health promotion" and "specific protection", such as Immunization, chemoprophylaxis, Protection against occupational hazards. Secondary prevention is defined as "action which halts the progress of a disease at its incipient stage and prevents complications." The specific interventions are: early diagnosis and adequate treatment. [3] Tertiary prevention is used when the disease process has advanced beyond its early stages. It is

defined as “all the measures available to reduce or limit impairments and disabilities, and to promote the patients’ adjustment to irremediable conditions.”

It is important to have an annual health check-up. Determining the status of bodily functions can help to identify any abnormalities before they can worsen, display symptoms and pose a significant risk. Identification of issues allow for prompt treatment, which can - reduce complications that may lead to loss of life and also helps one save on medical costs. [4]

According to studies, people who go for check-up occasionally attract diseases more than people who go for check-ups every year regularly. [5] It happens because more than 80% people don’t follow a healthy lifestyle and going for regular check-ups make us more aware about health, current lifestyle and also about what we should follow to live a healthy life. [6]

The Health Check-up begins with a multidimensional analysis and identification of risk factors of disease for each person. These may include lifestyle habits such as consumer behavior, stress from work, alcohol consumption, insomnia, etc. Past medical history, including a history of similar diseases will be taken into account and recorded as important data to be utilized in devising an appropriate health check-up program that is personalized for each patient. [7, 8]

A preliminary health check-up may include measuring blood pressure, pulse, and a physical examination conducted by physician. Other check-ups may include tests for blood disorders, glucose levels and cholesterol levels to determine the risk of heart disease, risk of paralysis in the future. Other tests will examine kidney function, uric acid, and lung x-rays. Specific tests can also be conducted to determine the risk of specific diseases as necessary such as cancer in men and woman. [9] This may include blood test to find prostate cancer for men or tests for Cervical cancer and breast cancer in women.

So, this retrospective study will help to evaluate that the yearly health check-up will be actually beneficial for the people or not. So, the research question of this study is as following: “Is there any role of Master health check-up clinic for early detection of diseases, and beneficial for life?”

II. METHODOLOGY

This retrospective study was carried out on a total of 764 patients who did whole body check-up at the Imperial Hospital Limited during September 2019 to August 2021. The patients of Master health clinic who did the whole-body checkup at Master Health Clinic in Imperial Hospital Limited and were apparently healthy individuals and patients with known medical conditions without significant symptoms. Both male and female patients have included. The data source is Hospital Information System (HIS) software of Imperial Hospital Limited (IHL). The data of the patients, their results, and their final reports were collected from the master health checkup section records of Hospital Information System (HIS) software of Imperial Hospital Limited (IHL). Statistical analyses of the results were be obtained by using window-based Microsoft Excel and Statistical Packages for Social Sciences (SPSS-24).

III. RESULTS

Table- I: Age distribution of the attending persons at check-up center (n=764)

Age Group	N	%
18 - 30	76	9.96
31 - 40	185	24.21
41 - 50	211	27.62
51 - 60	172	22.51
61 - 70	80	10.48
71 - 80	34	4.45
81 - 90	6	0.79
Total	764	100.00

Out of all attending people, 211 (27.62%) were of 41-50 years age group, 172 (22.51%) were between 51-60 years age group, only 6 (0.79%) were 81-90 years age group.

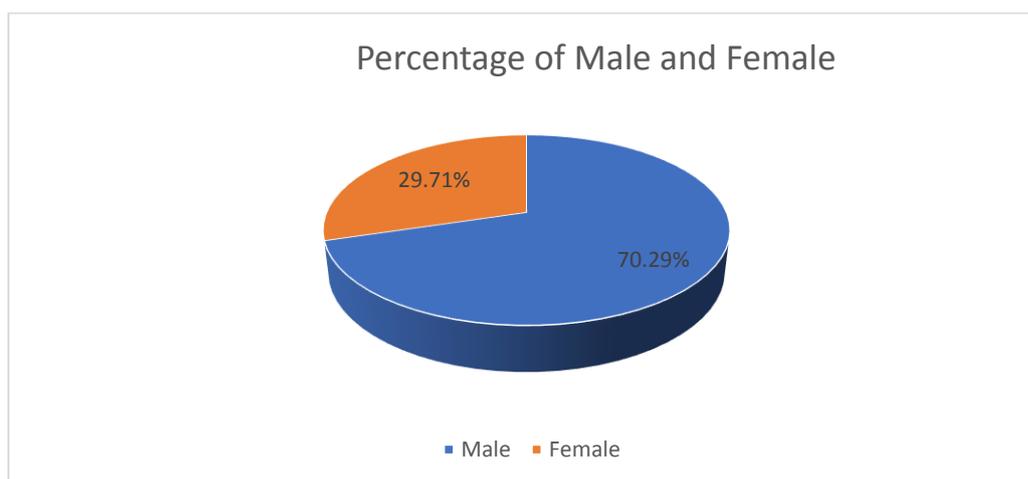


Figure- I: Gender distribution of the respondents (n=764)

Among the respondents (537) 70.29% were male and the remaining (227) 29.71% were female.

Table- II: Comparison of newly detected disease prevailing among the male and female cases (n=303)

Disease name	Males		Females		Total	Remarks
	Number of cases	Percentage %	Number cases	Percentage %		
Diabetes	14 (06.54%)	70.00%	6 (06.74%)	30.00%	20	X ² -Test result is statistically significant X ² = 165.28 Df = 9.00 P-Value =0.00
HTN	62 (28.97%)	76.54%	19 (21.35%)	23.46%	81	
IHD	36 (16.82%)	60.00%	24 (56.97%)	40.00%	60	
Dyslipidemia	49 (22.90%)	70.00%	21 (23.59%)	30.00%	70	
Fatty liver	10 (04.67%)	50.00%	10 (11.24%)	50.00%	20	
Hypothyroidism	11 (05.14%)	73.33%	4 (04.49%)	6.67%	15	
Hyperuricemia	9 (04.2%)	81.82%	2 (02.25%)	18.18%	11	
GSD	3 (01.4%)	100.00%	0 (0.00%)	0.00%	03	
BHP	20 (9.35%)	100.00%	---	----	20	
Breast Lump	---	---	3 (03.37%)	100%	03	
Total	214	70.86%	89	29.14%	303	

Out of 214 males, 62 (28.97%) were diagnosed as hypertensive, among 89 females, 21 (23.59%) were suffering from dyslipidemia. Among 20 newly diagnosed diabetes cases, 14 (70%) were males and 6 (30%) were females. There were 15 hypothyroid cases, out of which 11 (73.33%) were male and 4 (26.67%) were female. X² test reflects significant result expressing wide variation among males and females on newly diagnosed disease conditions.

Table- III: Proportion of Known cases found before doing Preventive health check. (n=764) (Male=537; Female: 227)

Name of Disease	Total Patients (n1)	Known Case found (n2)	Percentage of Known Case found (%)
Diabetes	764	251	32.85
HTN	764	301	39.40
IHD	764	118	15.45
Dyslipidemia	764	146	19.11
Fatty liver	764	43	5.63
Hypothyroidism	764	31	4.06
Hyperuricemia	764	17	2.23
GSD	764	4	0.52
Breast lump (Female)	227	1	0.44
BHP (Male)	537	40	7.45

Out of all known cases 39.40% were hypertensive and 32.85% had diabetes. Only 0.44% had lumps in breast and 7.45% had BHP.

Table- IV: Discovered newly detected cases after doing Preventive health check. (n1=764) (Male=537; Female: 227)

Name of Disease	Total Patients (n1) except known cases	Cases Newly detected (n1)	% of cases Newly detected
Diabetes	513	20	3.90
HTN	463	81	17.28
IHD	646	60	9.29
Dyslipidemia	618	70	11.33
Fatty liver	721	20	2.77
Hypothyroidism	733	15	2.05
Hyperuricemia	747	11	1.47
GSD	760	3	0.39
Breast lump (Female)	226	3	1.33
BHP (Male)	197	20	10.15

Out of total patients except known cases for each disease the newly detected cases of hypertension were highest- 81 (17.28%); and newly detected cases of dyslipidemia were of- 70 (11.33%). Newly detected GSD cases were only – 3 (0.39%).

Table- V: Statement of known cases and newly detected cases after preventive health check-up among the respondents (n=764)

Name of Disease	Known cases			Newly detected diseases		
	Total Patients (n)	Known Case found	% of Known Case found (%)	Total Patients (Test Done) (n1)	Case Newly detected	% of case Newly detected (%)
Diabetes	764	251	32.85	513	20	3.90
HTN	764	301	39.40	463	81	17.28
IHD	764	118	15.45	646	60	9.29
Dyslipidemia	764	146	19.11	618	70	11.33
Fatty liver	764	43	5.63	721	20	2.77
Hypothyroidism	764	31	4.06	733	15	2.05

Hyperuricemia	764	17	2.23	747	11	1.47
GSD	764	4	0.52	760	3	0.39
Breast lump (F)	227	1	0.44	226	3	1.33
BHP (M)	537	40	7.45	197	20	10.15

In case of diabetes, old known cases were 251 (32.85%), and newly detected cases were 20 (3.90%). In case of Hypertension old known cases were 301 (39.40%) and newly investigated check-up findings were 81 (17.28%). IHD was also newly revealed among 70 (11.00%) persons out of 646 newly tested people.

Table- VI: Comparison of proportionate distribution of old cases and newly diagnosed cases by preventive health check-up among the female respondents who have no disease (n=227)

Name of Disease	Total Female Patients (n)	Known Case found	% of Known Case found	Total Female Patients not known cases (n1)	Case Newly detected	% of case Newly detected
Diabetes	227	91	40.09%	136	6	4.41%
HTN	227	102	44.93%	125	19	14.40%
IHD	227	31	13.66%	196	24	12.24%
Dyslipidemia	227	41	18.06%	186	21	11.29%
Fatty liver	227	9	3.96%	218	10	4.59%
Hypothyroidism	227	16	7.05%	211	4	1.90%
Hyperuricemia	227	1	0.44%	226	2	0.88%
GSD	227	0	0.00%	227	0	0.00%
Breast lump	227	1	0.44%	226	3	1.33%

Above table reflects that among the females, 40.09% were diabetic, newly detected diabetes were found 4.41%, among female patients. 44.93% were recorded hypertensive, and newly found hypertension in 14.40% among female patients.

Table- VII: Comparative statement of old confirmed cases and newly detected cases after preventive health check-up among 31-40 years patients (n=184)

Name of Disease	Total Patients (n)	Total Known Case found	N% of Known Case found	Total Patients not known cases (n1)	Total Case Newly detected	N1% of case Newly detected
Diabetes	184	30	16.30%	154	4	2.60%
HTN	184	31	16.85%	153	21	13.73%
IHD	184	5	2.72%	179	9	5.03%
Dyslipidemia	184	32	17.39%	152	11	7.24%
Fatty liver	184	11	5.98%	173	2	1.16%
Hypothyroidism	184	10	5.43%	174	3	1.72%
Hyperuricemia	184	6	3.26%	178	3	1.69%
GSD	184	1	0.54%	183	0	0.00%
Breast lump	49	0	0.00%	49	0	0.00%
BHP	135	2	1.48%	133	1	0.75%

It is shown from the table, old diagnosed important cases were of HTN 16.85%, diabetes 16.30% and dyslipidemia 17.39%. After preventive health check-up, 13.73% HTN, 2.60% diabetes and 7.24% dyslipidemia new cases were explored.

Table- VIII: Newly identified cases by health check-up and old diagnosed cases among 41-50 years aged people (n=211)

Name of Disease	Total Patients (n)	Total Known Case found	N% of Known Case found	Total Patients not known cases (n1)	Total Case Newly detected	N1% of case Newly detected
Diabetes	211	65	30.81%	146	15	10.27%
HTN	211	76	36.02%	135	25	18.52%
IHD	211	20	9.48%	191	23	12.04%

Dyslipidemia	211	40	18.96%	171	32	18.71%
Fatty liver	211	11	5.21%	200	10	5.00%
Hypothyroidism	211	7	3.32%	204	5	2.45%
Hyperuricemia	211	5	2.37%	206	2	0.97%
GSD	211	1	0.47%	210	3	1.43%
Breast lump	59	0	0.00%	59	2	3.39%
BHP	152	3	1.97%	149	2	1.34%

41-50 years aged people known hypertensive cases were the highest (36.02%), next the cases of known diabetes (30.81%). After health check-up 18.71% new cases of dyslipidemia, 18.52% of HTN and 5% cases of fatty liver were identified.

Table- IX: Already established old cases and identified new cases after health check-up among the 61-70 years age group of people (n=83)

Name of Disease	Total Patients (n)	Total Known Case found	% of Known Case found	Total Patients not known cases (n1)	Total Case Newly detected	% of case Newly detected
Diabetes	83	50	60.24%	33	1	3.03%
HTN	83	58	69.88%	25	2	8.00%
IHD	83	37	44.58%	46	3	6.52%
Dyslipidemia	83	16	19.28%	67	5	7.46%
Fatty liver	83	6	7.23%	77	2	2.60%
Hypothyroidism	83	4	4.82%	79	1	1.27%
Hyperuricemia	83	1	1.20%	82	1	1.22%
GSD	83	0	0.00%	83	0	0.00%
Breast lump	32	0	0.00%	32	0	0.00%
BHP	51	15	29.41%	36	7	19.44%

There were 44.58% IHD old cases and BHP patients were 29.41%. Preventive health check-up helped to recognize 7.46% new cases of dyslipidemia and 19.44% new cases of BHP.

Table- X: Review of already established cases and newly identified cases among the respondents of 81-90 years by check-up (n=6)

Name of Disease	Total Patients (n)	Total Known Case found	% of Known Case found	Total Patients not known cases (n1)	Total Case Newly detected	% of case Newly detected
Diabetes	6	3	50.00%	3	0	0.00%
HTN	6	4	66.67%	2	0	0.00%
IHD	6	3	50.00%	3	0	0.00%
Dyslipidemia	6	2	33.33%	4	0	0.00%
Fatty liver	6	1	16.67%	5	0	0.00%
Hypothyroidism	6	1	16.67%	5	0	0.00%
Hyperuricemia	6	0	0.00%	6	0	0.00%
GSD	6	1	16.67%	5	0	0.00%
Breast lump	2	0	0.00%	2	0	0.00%
BHP	4	2	50.00%	2	0	0.00%

No newly detected cases among the 81-90 years aged respondents.

IV. DISCUSSION

Due to the current life style, food habits, lack of exercise, and stress, most of the people are becoming more prone to develop diseases like diabetes, hypertension, dyslipidemia, ischemic heart disease etc. Also, the regular health check-up is commonly neglected. [10] But early detection of disease in its initial phase helps in timely therapeutic interventions and treatment, burden of the patient in the hospital will be reduced, thereby reducing the morbidity, mortality and economic burden for treatment. [11]

According to Bangladesh Health Watch Report 2016, In Bangladesh, Non-Communicable Diseases (NCDs), like diabetes, heart attack, stroke, cancer and chronic lung diseases, are estimated to account for 59% of

total deaths. [12] Out of this 59%, death due to cardiovascular diseases were 17%, due to Chronic respiratory diseases were 11%, due to Cancers were 10%, due to Diabetes 3%, due to Other NCDs were 18%.

In our study, after exclusion total 764 patients were included in the study. 537 (70.28%) were male and 227 (29.71%) were female. The number of patients by age wise distribution: 18-30 years old were 76 patients (9.94%), 31-40 years old were 184 patients (24.08%), 41- 50 years old were 211 patients (27.6%), 51-60 years old were 172 patients (22.5%), 61-70 years old were 80 patients (10.4%), 71-80 years old were 34 patients (4.4%), and 81-90 years old were 06 patients (0.7%). Out of 764 patients, 251 patients (32.85%) had prior diabetes, 301 patients had prior hypertension (39.40%), 118 patients (15.45%) had prior IHD, 146 patients (19.1%) had prior dyslipidemia, 43 patients (5.6%) had prior Fatty liver, 31 patients (4.06%) had prior hypothyroidism, 17 patients (2.23%) had prior Hyperuricemia, 4 patients (0.52%) had prior GSD. Out of 227 female patients, 01 patient (0.44%) had prior Breast lump, out of 537 male patients 40 patients (7.45%) had already BHP.

An article on Prevalence of diabetes and prediabetes among Bangladeshi adults and associated factors: Evidence from the Demographic and Health Survey, 2017-2018 has shown that the Prevalence of diabetes in Bangladesh, were 8.4 million adults in 2019, and projected to almost double (15.0 million) by 2045. [13] It is also estimated that another 3.8 million people had prediabetes in Bangladesh in 2019. Studies, including a systematic review and meta-analysis, and national survey reports showed that the prevalence of diabetes among adults has increased substantially in Bangladesh, from ~5% in 2001 to ~14% in 2017.

A study on Findings from National Demographic and Health Survey, 2017–2018, on Prevalence, awareness, treatment, and control of hypertension in Bangladesh has revealed that the overall age-standardized prevalence of hypertension was 26.2% (95% CI, 25.5-26.9); (men: 23.5%, women: 28.9%). [14] Among those with hypertension (n = 3531), 36.7% were aware that they had the condition, and only 31.1% received anti-hypertensive medication. The prevalence of controlled hypertension was 12.7% among those with hypertension and 43.6% among those treated for hypertension (n = 1306).

A systematic review and meta-analysis of the studies on Prevalence of cardiovascular disease (CVD) among Bangladeshi adult population revealed that the weighted pooled prevalence of CVD was 5.0%, regardless of the types of CVD, gender and geographical location of the study participants. [15] Weighted pooled prevalence of overall CVD in the Bangladeshi population was higher in urban areas (8%) compared to rural areas (2%). The highest reported prevalence (21%) was for heart disease, while the lowest reported prevalence (1%) was for stroke.

A nationwide population-based survey on Prevalence and risk factors of stroke in Bangladesh revealed that the prevalence of stroke has increased four times over the past decade in Bangladesh as 11.39 people per thousand population suffered a stroke in 2021. [16] Hypertension, dyslipidemia, tobacco use, diabetes, ischemic heart disease are the most common risk factors observed among stroke patients.

In this study at Imperial Hospital, newly detected disease states: Among 513 patients who had no prior history of diabetes, 20 patients (3.90 %) had found Diabetes. Blood pressure data were analyzed for 463 patients who had no prior history of hypertension. Among them, 81 patients (17.28 %) found Hypertensive. Among 646 patients who had no prior history of IHD, 60 patients (09.29 %) were detected had IHD. Among 618 patients who had no prior history of Dyslipidemia, 70 patients (11.33 %) found sufferers from Dyslipidemia. Among 721 patients who had no prior history of Fatty liver, 20 patients (02.77 %) found Fatty liver. Among 733 patients who had no prior history of Hypothyroidism, 15 patients (02.05 %) diagnosed as Hypothyroidism. Among 747 patients who had no prior history of Hyperuricemia, 11 patients (01.47 %) were found having Hyperuricemia. Among 760 patients who had no previous history of GSD, 03 patients (00.39 %) had GSD. Among 226 female patients who had no past history of Breast lump, 03 patients (01.33 %) were detected as case of Breast lump. Among 197 male patients who had no past history of BHP, 20 patients (10.15 %) diagnosed case of BHP. The percentage of numbers of newly detected cases for mentioned diseases for 31 to 40 years age group were found Diabetes 2.60%; HTN 13.73%; IHD 5.03%; Dyslipidemia 7.24%; Fatty Liver 1.16%; Hypothyroidism 1.72%; Hyperuricemia 1.69%; BHP 0.75%; There was absence of GSD and breast lump cases.

The percentage of numbers of newly detected cases for specified diseases in 61 to 70 years age group were found as Diabetes 3.03%; HTN 8.00%; IHD 6.52%; Dyslipidemia 7.46%; Fatty Liver 2.60%; Hypothyroidism 1.27%; Hyperuricemia 1.22%; BHP 19.44%. There was no case of nGSD and breast lump. The percentage of numbers of old cases for selected diseases among 81 to 90 years age group were found as 50% had diabetes, 66.67% had HTN, 50% had IHD, 33.33% had dyslipidemia, 16.67% had fatty liver, hypothyroidism and GSD. BHP already found in 50% of males.

Limitations of the study

The present study was conducted in a very short period due to time constraints and funding limitations. The small sample size was also a limitation of the present study.

V. CONCLUSION

It is evident that there is significant role of Master health check-up among the younger people, as in this study there are significant number of disease states were newly identified by preventive health checkup in case of 31 to 60 years old people. So, younger people can be encouraged to utilize preventive health check-up for early detection of disease states. This will help to adopt timely interventions, treatment and life style modification, which will reduce the social and economic burden for the management of diseases in the population.

VI. RECOMMENDATION

This study can serve as a pilot to much larger research involving multiple centers that can provide a nationwide picture, validate regression models proposed in this study for future use and emphasize points to ensure better management and adherence.

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