

Medical Check-Ups Whether Fruitful or Futile and Time Wasted: A Retrospective Analysis of 1075 Cases

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Abstract

Examinations of healthy people have become an important part of healthcare. In India, various healthcare institutes undertake health care programs as packages wherein routine screening of common diseases is done, risk factors determined and analyzed. These are taken either by health professionals, consulting doctors in order to prevent future illnesses. Health checks are mandatory for many government servants, non-institutional workers, factory workers, students who are seeking admissions to professional colleges/courses. The lab tech packages, clinical examination, financial burden, overdiagnosis, false positive and false negative aspects of examination need review for defining concept of medical checks whether fruitful or futile. We have undertaken a retrospective analysis in 1075 cases for analyzing varied aspects of health checkups—included a battery of investigations, some of which were inappropriate due to their poor diagnostic yield and cost implications. Pitfalls are analyzed and suggestions discussed.

Keywords: Health check-up's; Screening tools; Lab packages

Introduction

Cochrane review defines health check as screening for more than one disease or risk factors in more than one organ system. The lab test packages include tests which are in keeping with national/international recommendations. Some tests here are entirely unnecessary and unwarranted. These unwarranted tests could provide more harm than benefits and lead to financial burden, over-diagnosis, over-treatment and psychological distress. The common objectives for health check-up's should be as under:

- Screening test should be scientifically sound, relevant and should aim to reduce morbidity and mortality from diseases.
- Screening test should adopt the legal rules for medical checkups for any risk factor disorders.
- Risk benefit ratio should not be detrimental to patient.
- People should be free to test, provided they are kept well informed to avoid any cognitive dissonance, emotional influences. (Example: Malignancy positive reports on biomarkers, etc.)
- Tests should reduce stress of the individual, not that the test be performed as per providers' ideas. The tests should be analytically valid and clinically reliable. The unreliable and invalid medical checks do not improve health but harm the individuals.
- Emphasis on lifestyle modifications should be part of medical check. Advices on diet, smoking, walking, must be emphasized.
- Ethical consents for tests are undertaken (especially for HIV, HBsAg, etc.)

Materials and Methods

It is a retrospective analysis of cases (hospital staff) that had undergone medical health check up as mandatory for them in MGM Medical College Aurangabad. 1075 patients were analysed. Details were received from the record as per the format prepared. The format include preliminary data (Age, sex, height, weight), present, past history, vitals. Comorbidity, medication the patients are taking, their visit to other department, and advice given to them, lab investigation, cost incurred on it were noted. Basic investigation which were done for all are CBC, fasting and post prandial blood sugar level, serum creatinine, urine routine, ECG. For female patients more than 40 age are subjected to PAP smear. Depending upon patients complaints other test like TMT, 2DECHO, CXR (PA), USG, TFT, LFT, lipid profile, Serum B12, Vit D, Hb1 AC was done. The data was analysed.

Forms of health checks

Health Checks for asymptomatic people are many.

- Single health checkup
- Multiphasic screening-cholesterol, PSA, and post result visits.
- Preventive health checkups/General health checkups

General health checkup is a broad terminology which

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encompasses a variety of interventions. It's a common word used in advertisements. Chiefly carried out investigations are for chronic diseases of India like hypertension, diabetes mellitus, cardiovascular diseases, etc. The preventive/general health checkups should provide beneficial guidelines to individuals for common diseases and their management. Besides, guidelines should aim to detect pre-diabetics, early-hypertensive and early cancers in otherwise asymptomatic individuals.

Results

Screening done for 1075 total patients, of which 308(28.7%) were males and 767(71.3%) were females with age distribution from 18 years–60 years. Amongst 1075 candidates who had undergone health checkup, 46(4.2%) were found diabetics, 4 were newly detected and remaining 20 patients had impaired blood sugar on investigations. Records reveal that no known diabetic patients or newly detected diabetic patients were checked for evidence of neuropathy, nephropathy and retinopathy. None were subjected for fundoscopic examination despite sizable cases had evidence of Diabetes Mellitus, Hypertension or Ischaemic Heart Disease. 26(2.7%) of 296 candidates had abnormal thyroid function tests, of these 4 were hyperthyroid and remaining had hypothyroid status. 3 patients had newly detected hypothyroidism. Among 1075 subjects screened for hypertension, 28 were known hypertensive, on treatment, while only 2 subjects were found hypertensive on clinical examination. 10(0.9%) subjects revealed history suggestive of Ischemic heart disease. ECG was normal in them. No TMT done in them. Three individuals were found to have refractive errors while one patient had dental carries. 23(2.14%) patients found to have urinary tract infection. 10(1.3%) patients among 767 females had gynecological problems for which they were referred to regular OBGY OPD for their problems. 4 cases undergo invasive test. 3 underwent for Pap smear, 1 for ovarian biopsy. 47(4.38%) persons found to have haemoglobin <9 mg/dl suggesting moderate anaemia. 45 patients were screened for vitamin B12 deficiency. 15(31.9%) were found to have megaloblastic anaemia. 11 (23.4%) were having koilonychia and low MCV suggesting iron deficiency. 20 individuals who were anemic, further testing not advised for cause of anaemia. 0.9% subjects had high eosinophil count on peripheral smear. Among 25 individuals who were screened for vitamin D deficiency, only one was found to be deficient. 132 candidates of 1075 in whom liver function tests were done, 8(6.07%) patients had abnormal LFT reports, and none had history of jaundice. Of 1075 individuals, 116(10.8%) patients were asked to do lipid profile test. 15(12.9%) patients noticed abnormal lipid profile. 2(0.2%) subjects were obese. Only one individual revealed history of alcohol and only 2 for smoking. Figures are strikingly very low, could be a hiding factor while undergoing medical examination. History records were found with inadequate details of drug consumption, regularity and omission of drug is not mentioned. Reasons for the said problems were not cited. If omitted reasons for discontinuation not written.

Case records do not reveal follow up instructions especially to diabetics, hypertensive, candidates of ischemic heart disease, anaemic and those having endocrinal problems

None of them were advised about life style modifications, might

have been done as verbal instructions but it lacks documentation.

This study being a retrospective search analysis, approximately 1075 cases, nearly 250 persons attending outpatient department post medical checkup at this institute were requested to opine on the time duration which they experienced in completing the process of medical checkups. Most agreed for approximate 2½ to 6 hours needing in completing the process of health checkup, extra hours are required in receiving various investigational reports.

Discussion

Medical Institutes that provide health care in India frequently offer health checkups packages for screening for cardiovascular disease, lipid profile, type 2 Diabetes Mellitus, Hypertension and screening for breast and prostate cancers. The objectives of the packages are prevention and early detection of chronic diseases. Many places approach remains in assessing multiple organ system to ascertain whether the individual is healthy or otherwise. Criteria for good personal health check could be analyzed keeping in mind what makes a test good or bad. The minimal criteria to answer it would be that a good test ought to be reliable and valid and a bad one is unreliable and invalid. The good tests are having high treatability of risk factors for diseases. The health checks clearly provide opportunities for health improvement. Any test undertaken should be cost effective and provide more benefits than harm.

The aspiration criteria provide objective explanation of test results. Here follow up of cases should be emphasized. Example diabetes mellitus case should have follow up checks for nephropathy neuropathy and retinopathy. In the present retrospective analysis of 1075 subjects, case files, 46(4.2%) were found diabetic. 04 were newly detected as Diabetes and remaining 20 had abnormal sugar range. Records do not reveal that diabetic subjects either new or old were asked to check for evidence of neuropathy, nephropathy or retinopathy. None were subjected for fundoscopic examination despite sizeable cases had evidence of diabetes mellitus, hypertension or ischaemic heart disease. People should be free to test on any risk factors of diseases provided patients are kept well informed about their results—either positive and/or negative. Example: For risks of cardiovascular system, one performs cholesterol, LDL, HDL, TG, BMI, etc. Another example: Prostate specific antigen should be done with rectal examination for prostate as 80% of PSA tests are carried out without rectal examination in outpatient department [Tables 1-3].

Medical specialists express their strong desire to prevent serious illnesses by performing sophisticated imaging/ nuclear investigations while as yet no tests with good predictive value is available. Tests having higher the sensitivity, higher the specificity better quality of test are considered. PSA is not a good test for screening as specificity is much low. PSA as screening test is on decline. [1] Prostate cancer is rare before age

Table 1: Showing gender analysis of 1075 subjects.

Gender	Number of persons (%)
Male	308 (28.7%)
Female	767 (71.3%)

Table 2: Showing test undertaken in medical health checkup and percentage abnormalities.

Test	Number of patients	Normal	Abnormal
Liver function test	132	124	08 (6%)
Lipid profile	116	101	15 (12.9%)
Vitamin D3	25	24	01 (4%)
Hemogram	1075	1028	47 (4.38%)
Megaloblastic anemia			15
Iron deficiency anemia			11
Mixed deficiency anemia			20
Thyroid function test	296	270	26 (8.7%)*

*: Out of 26, 22 were hypothyroid and 4 individuals were found to be hyperthyroid.

Table 3: Showing abnormal metabolic and thyroid abnormalities in studied cases.

Parameters	Total number of tests	Normal	Abnormal		Total
			Newly detected	Previously diagnosed case	
Diabetes Mellitus	1075	1029	4	42	46
Hypertension	1075	1045	2	28	30
Ischemic heart disease	1075	1065	0	10	10
Hypothyroid status	296	270	3	19	22
Hyperthyroid status			4	0	4

Table 4: Showing subjects attending Ophthalmic, Dental and Gynaec OPD, having abnormalities.

	Total	Normal	Abnormal
Ophthalm	1075	1072 (99.72%)	03 (0.28%)
Dental	1075	1074 (99.9%)	01 (0.10%)
Gynaec	767	757 (98.70%)	10 (1.30 %)

of 50 years. Most deaths take place after age of 75 years due to prostate cancer. It ranks second among men in large cities of India while less common in rest part of the country despite many packages and institutions carry out this test as a routine since it is a slow growing killer often takes from its onset 3 years for bone metastasis, a terribly painful condition. [2] Here we wish to prevent this terribly slow growing painful condition. Spirometry for pulmonary functions and COPD early detection is of dubious value focal/occult blood to detect early colorectal carcinoma has been shown to prevent 1 in 7 colorectal deaths, but at the cost of invasive procedures. [3,4] All such patients require multiple visits follow up varies – shorter or longer, different for different patients for having their assessment outcome.

In cohort study analysis with 150000 participants for medical checks reported false positivity for cancer at higher centers viz: 3314 male patients from prostatic biopsy, 16379 colonoscopy for rectal malignancy, and 1072 women had ovarian surgeries, did not lead to cancer diagnosis. This research was conducted by US National Cancer Institute and National Institute of Health in 2018. The analysis, found the screening tests for these four types of cancer (PLCO) i.e. Prostate, Lung, Colorectal, Ovarian (1993–2001). The reports that were available as positives had a hefty 96% false positivity reported from this centre. [5-9]

The lab test packages include tests which are in keeping with national/international recommendations. Inclusion of large number of test are entirely unnecessary inappropriate and unwarranted, as these tests may provide more harm than benefits, may result in financial burden, overdiagnosis, overtreatment, psychological distress, and subjection to advanced invasive follow ups. False assurances are often given because of false

negative test results in some cases. Mammography in some institutional packages being carried out needlessly as part of health package in below 40 years of age females [Table 4].

To answer whether medical checks in asymptomatic individuals are fruitful or futile exercise, answer depends upon how aptly we cover and meet the objectives of health checks. False positive or false negative tests and its impact on individual, psychology and financial burden on their pockets.

Conclusion

1. Health checks should be performed in people likely to benefit most from the medical check includes person who are asymptomatic and health check is aimed to prevent risk factors of diseases.
2. Health checks are essential and mandatory for all government, institutional, non-institutional workers, factory workers, and professional students, military and para-military personnel.
3. People should be free to participate in whatever health check while optimizing the benefit harm ratio of health checks.
4. Enhance the positive predictive value of the test which depends on prevalence of the disease. Mammography under 40 years of age and tests for CVD risk factors may be having poor positive predictive value whereas age above 40, fecal blood plus per rectal examination has good positive predictive value.
5. The test should be analytically and clinically valid.

6. Imaging and ionizing tests should be limited. It is necessary to protect citizen against harmful effects of health. The tests orders ought to be non-harmful and ethically sound, besides clinically valid. Ethics do not distinguish between population screening and personal health checks when it comes to benefit and harm.
7. False positive and false negative results of test may lead to unnecessary further investigations and unjustified treatments.
8. Emphasis must be done on lifestyle modifications on smoking, alcoholism, obesity, etc. In present analysis. Out of 1075 screening papers that were analysed, nowhere lifestyle modifications and its importance emphasized by any physician or doctor; though it might have been done verbally but it lacks documentation.

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