

Profile of multimorbidity in outpatients attending public healthcare settings: A descriptive cross-sectional study from Odisha, India

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ABSTRACT

Background: Multimorbidity, the co-occurrence of two or more long-term conditions (LTC) in individuals, is associated with greater healthcare utilization, expenditure, and premature mortality, thus posing a challenge for patients and healthcare providers. Given its sparsely available epidemiological evidence, we aimed to describe the profile of multimorbidity in a representative sample of public healthcare outpatients in India. **Methods:** A facility-based cross-sectional study was conducted from 1st July to 31st December 2015 in Odisha, India. Fifteen public healthcare facilities were selected by stratified random sampling. Data was collected from 1,870 adult outpatients attending these settings using Multimorbidity Assessment Questionnaire for Primary Care (MAQ-PC) tool. **Result:** Nearly 3/4th of both women and men outpatients were either obese or overweight. >1/2 had multimorbidity (≥ 2 LTC) while 1/3rd had ≥ 3 LTC. Most prevalent condition was hypertension (63%), followed by chronic backache and arthritis. Cancer and psychiatric illness were least reported. Multimorbidity increased with age group, socioeconomic status, and education level. Females across all age groups had higher reported multimorbidity than males. Diabetes-hypertension was frequently occurring dyad. Both physical and mental component of quality of life was reduced in multimorbidity. **Conclusion:** Multimorbidity is becoming a norm in healthcare practice with high prevalence in females and older adults. Health services for non-communicable diseases need to include commonly occurring dyads along with health promotion. Higher prevalence in females reinforces the need to incorporate gender differences while studying multimorbidity. Analysis of multimorbidity epidemiology through an equity lens could illuminate the underpinning complexities and heterogeneities of this phenomenon.

Keywords: Comorbidities, cross-sectional, gender, MAQ-PC, multimorbidity, social determinants

Introduction

During the past few decades, in parallel with improvements in living conditions, changing lifestyle, increased healthcare efficacy

and longevity, low- and middle-income countries (LMICs) are witnessing a steep rise in non-communicable diseases (NCDs). Similarly, owing to the availability of definitive therapeutics, few infectious diseases are becoming chronic in nature.^[1] Consequentially, many LMICs are experiencing colliding epidemics of chronic infectious, tropical and NCDs, thus leading to growing number of population with multimorbidity.^[2] In fact, multimorbidity is becoming a “norm than exception” in healthcare practice across LMICs and no longer limited to older

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adults or affluent societies.^[3] India, the largest demography, is challenged by dual burdens of escalating prevalence NCDs and sustained presence of chronic infectious diseases.^[4]

Multimorbidity is a novel concept encompassing all the medical conditions of an individual; defined as the co-occurrence of two or more long-term conditions (LTCs), each one of which is either: (1) A somatic NCD of long duration, such as a hypertension or diabetes; (2) A mental illness of chronic nature, like mood disorder or dementia; (3) An infectious disease of long duration, for example, HIV.^[5] Individuals with multimorbidity experience inferior quality of life (QoL), perceive poorer physical and mental health, and have a lower functional capacity. They incur greater healthcare use and cost with heightened risk of hospital admissions and premature mortality, thus posing a daunting challenge for patients, physicians, and healthcare system alike.^[6] In fact, evidence reveals that it is not chronic conditions by themselves that increase the resource cost, rather, it is the number of types of conditions, that is, multimorbidity which is responsible.^[7]

Our systematic review on epidemiology of multimorbidity in South Asia had revealed that majority of studies have focussed on geriatric population; and few have investigated multimorbidity in all age groups; considered a selected panel of NCDs and did not include long-term infectious diseases.^[8] To fill this knowledge gap, we had conducted first ever study that estimated multimorbidity in primary care (public and private) settings and found the prevalence to be one third.^[9] This study had a limitation in being confined to primary healthcare population only.

Public healthcare system in India has a three tier structure encompassing primary (primary health centres and community health centres), secondary (district hospital and sub-divisional hospitals), and tertiary levels (medical college or referral hospitals).^[10] As there is no stringent gate-keeping system, many individuals could directly be attending the outpatient department of higher facility bypassing the primary healthcare, thus necessitating inclusion of three levels for a comprehensive assessment of multimorbidity.^[11]

Such profile could provide significant insights toward developing contextual patient-centric care, targeted population-level prevention services, and improved outcome strategies. With the newly formed “health and wellness centres” (HWCs) under the National Health Policy poised to deliver integrated chronic care at the community level, an understanding of the distribution of multimorbidity with respect to social determinants such as gender, economic status, literacy and could be more illuminating for equitable care planning.^[12,13]

In view of the above, the present study aimed to landscape multimorbidity among outpatients attending public healthcare settings. Our key objectives were: (a) estimation of self-reported multimorbidity among outpatients attending public healthcare facilities and its association with age, gender, education, socioeconomic status, (b) identification of commonly occurring

combinations of multimorbidity, (c) relationship between multimorbidity and QoL.

Methods

Study design and study setting

This facility-based cross-sectional study was conducted from 1st July to 31st December 2015 in Khurda district, Odisha, an eastern state of India. A total of 15 public healthcare facilities were selected by stratified random sampling. This included one referral hospital, two secondary level hospitals, four community health centres (two each from urban and rural), and eight primary healthcare centres (four each from urban and rural).

Sampling and sample size

Based on 31% prevalence of multimorbidity in our previous primary care study, 95% confidence interval, 80% power, and 1.5 design effect, and adjusting for non-response (10%), the final sample size calculated was 1,870.^[14] This was proportionately divided across study facilities based on the daily patient attendance and sampling fraction for each facility. Adult individuals (≥ 18 years) attending the outpatient’s department (OPD) of the selected health facilities were recruited through systematic random sampling. Those who provided the consent were interviewed after the consultation to avoid any disruption in the OPD management. Also, the exit interviews helped us to record the diagnosis in detail by going through the prescriptions. To avoid duplication, each patient was given unique identification number. For patients too ill to participate, or having debilitating physical or mental disabilities, data was collected from their attendants. Pregnant women and those who had already been interviewed previously under the present study were excluded.

Data collection

We used MAQ-PC, our previously developed and validated multimorbidity assessment questionnaire to collect data [Appendix I].^[15] The MAQ-PC comprised: sociodemographic data, multimorbidity assessment, and outcomes. The multimorbidity assessment elicited the presence of any of the 18 listed chronic diseases. These conditions were self-reported doctor diagnosed and cross-validated from prescription checks and medications. Open options for “any other conditions” were added to capture unlisted conditions if any. SF12 and PHQ 9 were used to assess Health Related Quality of Life (HRQoL) and depression, respectively.^[16] All interviews were conducted by two trained nurses well versed with local language and patient history taking. Each interview spanned 20-- 30 min. The bodyweight and height of every respondent was measured at enrolment.

Data analysis

During analysis five more LTC was included from the additional list totalling to 23. A score of ≥ 10 in PHQ-9 was taken as the cutoff value for depression. Obesity was defined as a body mass index ≥ 30.0 kg/m². Age was divided into six (18--29, 30--39, 40--49, 50--59, 60--69, ≥ 70 years) categories. Educational status

was classified as illiterate, primary, high school, higher secondary, graduation, and above. Economic status was categorized to those above (APL) and below poverty line (BPL). Multimorbidity was defined as two or more long-term conditions (≥ 2 LTC). The presence of LTC categories (none, single, multimorbidity) across these categorical variables was expressed as percentages. Data was analyzed using SPSS 20.

Ethical approval and participant consent

The ethical approval was accorded by Odisha State Research and Ethics committee (vide Letter No. 101/SHRMU dated 05/05/2015). Approval of the selected health facility and OPD in charge was obtained in prior. Each participant was briefed on the study objective and information being assessed. Written informed consent was obtained from all participants, and necessary steps were taken to ensure confidentiality and anonymity of patients at every step.

Results

Participant characteristics

Out of 1,870 participants, nearly 3/5th (63%) were males while 2/5th (37%) comprised females. Majority belonged to the age group of 50--59 years (34.4%), followed by 60--69 years (27.3%), and 40--49 years (21.7%). Nearly a quarter of the participants were BPL. Maximum number of study participants (~75%) had higher secondary education while 2/5th were graduate and above. 45.3% participants were employed, rest comprised homemakers (27.6%), retired (18.2%), and unemployed (8.9%).

Profile of chronic conditions and multimorbidity

More than half of the study outpatients were obese and one-fifth were overweight. Nearly 75% of participants (male and female) had overweight or obesity. Contrarily, underweight was 1.6% and 4.2% among males and females, respectively. Around 84% respondents had one or more LTC while 16% did not report any morbidity. One third of participants had single morbidity, 25% reported two, while 30% were having three or more LTCs. Overall, 55% outpatients were having multimorbidity.

Hypertension was the most leading LTC (62.3%) bearing similar proportion across male and females. Next ranking was acid-peptic disease (APD) (25%). Chronic back ache (CBA) and arthritis followed the list, affecting 1/5th participants while visual impairment ranked fourth (15%). Diabetes (12%), thyroid disease (10%), and chronic lungs disease (8.3%) followed, respectively. Heart disease (6%) and chronic kidney disease (CKD) (5%), hearing impairment (4%) were present in <10% of outpatients. Stroke, epilepsy, depression was reported among 2% respondents in each category while that being 1% for cancer and tuberculosis.

Multimorbidity and deprivation

Individuals under APL category had slightly higher prevalence of multimorbidity than their BPL counterparts. The prevalence

of single and three LTCs was similar in both groups [Figure 1]. Chronic lung disease, stroke, hearing difficulty, and epilepsy were reported higher in BPL group while APL had higher reporting of diabetes, hypertension, heart disease, CKD, and depression.

With respect to education, diabetes, hypertension, heart and thyroid disease, CKD was seen to be increasing with education level while the proportion of respondents with other chronic conditions were almost similar across different education levels. There was no noticeable difference in rural--urban distribution of LTCs.

Gender and multimorbidity

At the lower age group (18--29 years), multimorbidity was around 5% in both genders. With increasing age, the proportion of multimorbidity increases steeply in both males and females. However, this rise in proportion of multimorbidity with increase in age was higher for females than males. For example, multimorbidity among females in the age group 60--69 years was 45% which rose to 55% in the age group ≥ 70 years [Figure 2]. The same for males in the age group 60--69 and 70+ years, was 35% and 45%, respectively, both being lower than that observed in females. The leading chronic condition among male and female was almost the same. Proportions of females reporting APD, CBA, arthritis, thyroid disease were higher than males.

Age and multimorbidity

As depicted in Figure 3, the percentage of people with multimorbidity increased with age. Around 20% of 18--29 years' age group had at least one LTC which steadily rose to 80% (four fold) in the age group ≥ 70 years. Similarly, 2% individual in the age group 18--29 had multimorbidity (≥ 2 LTC) while that reached up to 20% (10-fold) in the age group 70+ years. Similarly, 1% 18--29 years' age group had 3 or more LTC which became around 15% (15 times) in the 70+ age group.

Hypertension was 44.3% in 30--39 years of age while 74.7% in the 60--69 years. Diabetes, another common chronic condition, exhibited a sharp increase in proportion from 6.1% in 18--29 years' age group to 39.8% in the age group of >70 years. Conditions like stroke and cancer were present among 1--3%

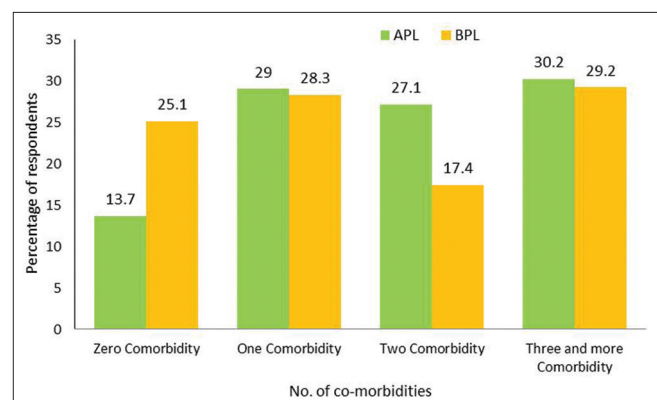


Figure 1: Multimorbidity by deprivation status among respondents

of patients of all the age groups from 40 to 70+ years while epilepsy, depression, and tuberculosis were found more among the younger age group of 30--39 years. Hearing impairment was found significantly in the age group 60--69 (6%) and 70+ (10.3%).

Pattern of multimorbidity (dyads)

Table 1 presents the matrix of pair-wise occurrence (dyads) of chronic condition among the outpatients. Diabetes was the most common co-occurring condition, primarily with hypertension (11.8%), arthritis (9.4%), heart disease (6.5%), vision impairment (5.6%), and chronic lung disease (CLD) (5.2%). After diabetes, hypertension co-occurred with different LTCs, notably with arthritis (17.7%), APD (17.7%), CBA (16.3%), and vision impairment (10.9%). Arthritis mostly co-occurred with CBA (9.2%), APD (6.5%), and vision impairment (5.4%). APD + CBA was seen among 6.8%, while CKD and hypertension among 4.7% cases. Thyroid + diabetes, thyroid + hypertension were in 4.6% and 6.5% respondents, respectively. The least was cancer being less than 0.5% co-occurring with other LTC.

Multimorbidity and health related quality of life

The physical and mental component scores for HRQoL was computed for patients with none, single, and ≥2 chronic conditions [Figure 4]. The mean QoL score for physical component was 43.56 for patients with no LTC and it reduced to 42.48 for patients with single chronic condition while it was 41.07 for multimorbidity. Similarly, mean mental QoL score considerably declined from 44.14 for patients with nil LTC to 40.79 for patients with multimorbidity.

Discussion

Multimorbidity is a pugnacious challenge for public healthcare systems in LMICs, yet very few studies have assessed its burden in these settings.^[17] Despite the substantial magnitude of NCDs, multimorbidity remains under-explored in healthcare settings in India.^[8] Our study aimed to describe the first ever profile of multimorbidity among adult out patients attending public healthcare settings (primary, secondary, and tertiary level) in Odisha. We broadly described the proportion of out patients having multimorbidity and how it varied with sociodemographic characteristics and QoL.

More than half outpatients were found to have multimorbidity; one third (30%) were with ≥3 LTCs, while one quarter (25%) had two long standing conditions. Around 80% had at least one chronic condition. Our previous studies on primary care settings had found similar prevalence but of lower magnitude (31%) thus establishing multimorbidity as a frequently encountered phenomenon across all levels of healthcare practice.^[9]

Multimorbidity was more common in those above poverty line compared to BPL. One of the reasons could be the increased

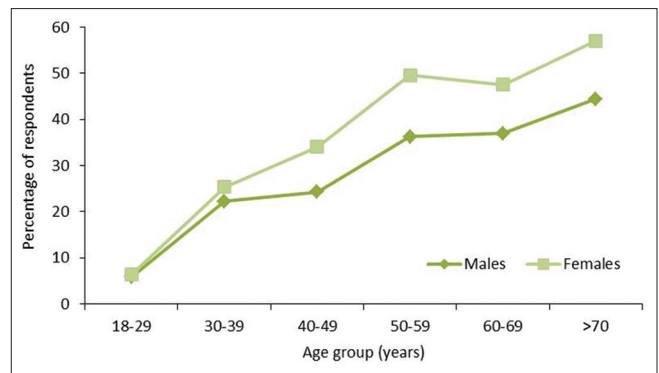


Figure 2: Distribution of multimorbidity by age and gender among respondents

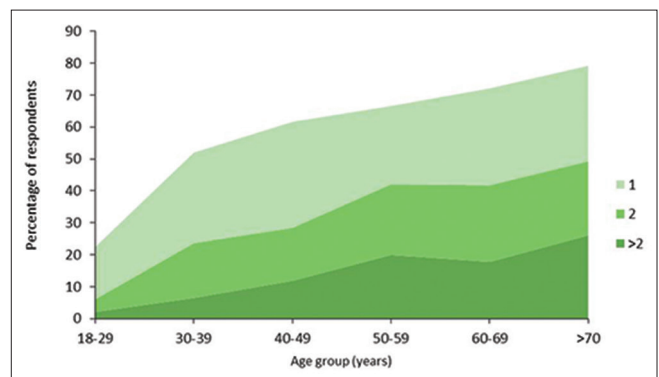


Figure 3: Distribution of multimorbidity in various age groups

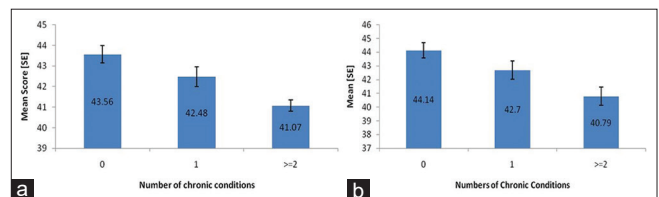


Figure 4: Quality of Life index (a) Physical Component (b) Mental Component score

access to healthcare among APC outpatients. However, as most of the previous studies have adjusted for the effects of socioeconomic status while investigating outcomes of multimorbidity, further studies examining multimorbidity across socio-economic gradient could provide a clearer picture.^[18]

Among individual LTCs, hypertension led the chart being prevalent in 2/3rd outpatients (64%) in congruence with previous studies. The increased proportion could be for improved health literacy, better symptom appraisal by physicians and routine screening under the NCD programme. At the same time, such observed high prevalence is worrisome since hypertension is an established risk factor for cardiovascular disease and mortality.^[19]

We found more than half outpatients as obese and one-fifth overweight with 3/4th of both male and female having either of the two. Both increased blood pressure, and obesity as individual metabolic risks have potential for consequent morbidities. The

Table 1: Dyads of multimorbidity among study participants

Chronic conditions	Diabetes	Hypertension	Arthritis	CLD	APD	CBA	Heart disease	Stroke	Vision problem	Deafness	Cancer	Kidney disease	Epilepsy	Thyroid disease	TB	Depression
Diabetes	112	108	86	47	31	22	59	7	51	19	5	13	11	42	2	18
%	12.3	11.8	9.4	5.2	3.4	2.4	6.5	0.8	5.6	2.1	0.5	1.4	1.2	4.6	0.2	2.0
Hypertension		568	161	61	161	149	49	15	99	25	7	43	9	59	3	11
%		62.3	17.7	6.7	17.7	16.3	5.4	1.6	10.9	2.7	0.8	4.7	1.0	6.5	0.3	1.2
Arthritis			195	33	59	84	18	2	49	13	2	18	2	34	0	6
%			21.4	3.6	6.5	9.2	2.0	0.2	5.4	1.4	0.2	2.0	0.2	3.7	0.0	0.7
CLD				76	32	25	4	3	15	6	1	4	1	10	0	2
%				8.3	3.5	2.7	0.4	0.3	1.6	0.7	0.1	0.4	0.1	1.1	0.0	0.2
APD					251	62	14	5	40	14	1	7	1	27	3	7
%					27.5	6.8	1.5	0.5	4.4	1.5	0.1	0.8	0.1	3.0	0.3	0.8
CBA						198	12	3	38	7	1	15	3	26	0	5
%						21.7	1.3	0.3	4.2	0.8	0.1	1.6	0.3	2.9	0.0	0.5
Heart disease							58	3	17	6	1	6	2	5	0	0
%							6.4	0.3	1.9	0.7	0.1	0.7	0.2	0.5	0.0	0.0
Stroke								18	3	0	0	1	0	2	0	0
%								2.0	0.3	0.0	0.0	0.1	0.0	0.2	0.0	0.0
Vision problem									135	15	0	18	4	16	1	3
%									14.8	1.6	0.0	2.0	0.4	1.8	0.1	0.3
Deafness										35	1	2	0	2	1	1
%										3.8	0.1	0.2	0.0	0.2	0.1	0.1
Cancer											10	0	0	0	0	0
%											1.1	0.0	0.0	0.0	0.0	0.0
Kidney disease												44	1	6	0	0
%												4.8	0.1	0.7	0.0	0.0
Epilepsy													20	5	2	2
%													2.2	0.5	0.2	0.2
Thyroid														90	1	4
%														9.9	0.1	0.4
TB															6	0
%															0.7	0.0
Depression																16
																1.8

coinciding of hypertension and overweight particularly in young age group outpatients is concerning. HWCs may consider increasing interventions to recognize, manage and prevent obesity and nutritional advice with health promotion in routine healthcare practice.^[20-22] Interestingly, we found the prevalence of thyroid diseases to be 10% across all age groups (30--70+), whereas the prevalence of psychiatric illness and cancer were the least.

Distribution of multimorbidity across age and gender revealed some interesting pattern. Multimorbidity was found to increase with age group, ranging from 6% in youngest group of females (18--29 years) to 57% in oldest (>70 years). Prior studies have reported that the prevalence of multimorbidity increases with age and is associated with higher healthcare cost and household expenditure.^[23-25] In our previous work describing the prevalence of multimorbidity among primary healthcare attendees, although the prevalence was not greater than in the age-matched general population, but the overall prevalence in outpatients was higher than general population.^[26]

Female outpatients reported higher multimorbidity than males across all age groups which is a revelation. The true magnitude could even be greater given the lower healthcare-seeking by females in India.^[27,28] Few studies, similar to our results, have demonstrated increased risk of multimorbidity among females. Further, some of these child-bearing age group women may become pregnant.^[29] Since mostly pregnant women have been excluded from multimorbidity studies, future research should specifically assess this special group. Moreover, we found a higher percentage of females without education than males (21.40% vs. 15.83%). This could further worsen the situation since multimorbidity is known to have negative relationship with literacy.^[30]

HRQoL, a composite index of well-being, is widely acknowledged outcome in chronic disease management.^[16] We observed considerable attrition in QoL (physical and mental) in the multimorbidity group vis-à-vis single LTC. Patients with multimorbidity undergo frequent physician consultations, longer hospital stays, higher healthcare costs; along with potential adverse effects of multiple drugs use and unrecognized treatment burden which substantially impairs QoL.^[4] Our previous study assessing HRQoL in primary healthcare patients had found negative effects of multimorbidity on both physical and mental health. Further multimorbidity is found to accentuate frailty and reduces the QoL in the pre-frail spectrum.^[31] Analyzing multimorbidity through an equity lens could illuminate the underpinning complexities and heterogeneities of this phenomenon, especially the embedded context in which illnesses are experienced, including individual circumstances.^[32]

Analysis of pairwise occurrence or dyads of LTCs showed diabetes to be the most commonly co-existing condition with other LTCs, the highest being with hypertension. Global diabetes report has suggested integrated management for improving diabetes care outcomes, especially when it is co-occurring with hypertension.^[33] Our findings reemphasize strategizing the

present NCD program so as to identify and manage the most commonly occurring clusters effectively while improving QoL.^[34] Moreover, the kaleidoscopic clustering of LTCs within the motif of multimorbidity requires adherence to clinical practice guidelines which have potential to improve outcomes for a range of LTCs, while developing new guidelines for certain groups of multimorbidity. With physical-mental multimorbidity becoming commonplace in healthcare practice, a shift in approach from conventional "one disease- one treatment" to "one patient- whole care" paradigm is needed.^[35]

Strengths and limitations

As we did not include information on onset of the LTCs, it is challenging to elucidate the direction of the association between the clusters. While aiding in our general understanding of chronic diseases profile, our data, though 5 years old, still provides the first ever landscape of multimorbidity at public healthcare level. Further, the findings offer greater insights into future public health research, particularly towards vulnerability stratification within multimorbidity for patient management.^[36]

Conclusion

To summarize, our study presents the first ever landscape of multimorbidity patterns among out patients attending public healthcare settings from Odisha, India. We found that nearly 3/4th of outpatients, were either obese or overweight. More than half of the respondents had multimorbidity (≥ 2 LTC) while one-third of them had ≥ 3 LTC. Hypertension was the most prevalent LTC. Multimorbidity increased with age-group, socio-economic status and education level. Females across all age groups had higher reported multimorbidity than males. Diabetes was found to be the most common co-occurring condition with hypertension. Physical and mental component of QoL were reduced in multimorbidity. In view of the increasing number of patients with multimorbidity, public healthcare needs to be strategized to develop appropriate treatment guidelines and provide care for these populations. The higher reported prevalence of multimorbidity in females reinforces the need to incorporate gender differences while studying multimorbidity and designing models of care. Estimation of multimorbidity in women during pregnancy is a significant research need. The relationship between socioeconomic gradient and multimorbidity from equity perspective also needs to be looked at.

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Conflicts of interest

There are no conflicts of interest.

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Appendix 1

[PATIENT CODE: _____]			
Part-I (Background Information)			
1	Block Code <input style="width: 100%;" type="text"/>	2	Village <input style="width: 100%;" type="text"/>
3	Type of Facility: <input type="checkbox"/> 0 Public <input type="checkbox"/> 1 Private	4	Serial Number <input style="width: 100%;" type="text"/>
5	Age in Years		
6	Sex		<input type="checkbox"/> 0 Female <input type="checkbox"/> 1 Male
7	Religion		<input type="checkbox"/> 0 Hindu <input type="checkbox"/> 1 Islam <input type="checkbox"/> 2 Christian <input type="checkbox"/> 3 Others
8	Marital Status		<input type="checkbox"/> 0 Never Married <input type="checkbox"/> 1 Currently Married <input type="checkbox"/> 2 Separated/Divorcee <input type="checkbox"/> 3 Widow/Widower
9	Date of Birth (If available)		
11	Ethnicity		<input type="checkbox"/> 0 Schedule cast <input type="checkbox"/> 1 Schedule Tribe <input type="checkbox"/> 2 General
12	Present place of living		<input type="checkbox"/> 0 Urban <input type="checkbox"/> 1 Semi urban <input type="checkbox"/> 2 Rural
13	Highest Education		<input type="checkbox"/> 0 Illiterate <input type="checkbox"/> 1 Primary <input type="checkbox"/> 2 High school or Secondary <input type="checkbox"/> 3 Graduation and above
14	Housing type:		<input type="checkbox"/> 0 Kutcha <input type="checkbox"/> 1 Pucca <input type="checkbox"/> 2 Semi Pucca
15	Gross family income per month(INR):		
16	APL/BPL (as per ration card):		<input type="checkbox"/> 0 APL <input type="checkbox"/> 1 BPL
17	In the past 12 months have you been admitted to hospital for any diseases (Excluding trauma/accident)?		<input type="checkbox"/> 0 No <input type="checkbox"/> 1 Yes <input type="checkbox"/> 2 Don't Remember
18	If Yes , how many nights altogether have you stayed in hospital as a patient in the past 12 months	 (Nights)
19	Besides the hospitalization , in past 12 months how many times you have visited a Public Hospital for consultation?	 times
20	Besides the hospitalization , in past 12 months how many times you have visited a Private Hospital for consultation?	 times
21	How many <i>different types</i> of medicines/drugs are you taking at present?	 (count)
22	Are you covered under any health insurance? Like Rastriya Swasthya Bima Yojana/Employee State Insurance Scheme		<input type="checkbox"/> 0 No <input type="checkbox"/> 1 Yes <input type="checkbox"/> 2 Don't know

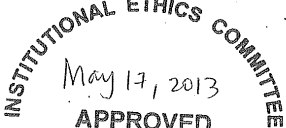
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[PATIENT CODE: _____]

Instruction: Please ask both 'A' & 'B' sections for each disease (Where ever applicable),
if the answer for either 'A' or 'B' is 'Yes' then pick the sheets asking generic questions about the same disease.

23. Conditions		Yes/ No
Arthritis	A. Have you ever been diagnosed by a doctor with <i>Arthritis</i> ?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	B. In the last 12 months have you experienced <i>pain, aching, stiffness or swelling in or around the joints (like arms, hands, legs or feet)</i> which were not related to an injury and lasted for more than a month?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Diabetes	A. Have you ever been diagnosed with <i>Diabetes</i> (high blood sugar)? (Not including diabetes associated with a pregnancy)	Yes <input type="checkbox"/> No <input type="checkbox"/>
	B. <i>Not applicable</i>	NA
Hypertension	A. Have you ever been diagnosed with <i>high blood pressure</i> (Hypertension)?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	B. <i>Not applicable</i>	NA
Chronic Lung Diseases (Including Asthma)	A. Have you ever been diagnosed with <i>Chronic Lung Disease (Emphysema, Bronchitis, Asthma, COPD)</i> ?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	B. <i>Not applicable</i>	NA
Acid Peptic Disease	A. Have you been diagnosed with <i>Acid-Peptic Ulcer Disease</i> (Gastritis) in last 12 months??	Yes <input type="checkbox"/> No <input type="checkbox"/>
	B. <i>Not applicable</i>	NA
Chronic Back Ache	A. In last 12 months, have you been diagnosed with <i>Chronic Back Pain</i> ?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	B. In last 12 months, have you had continuous Back pain for more than 3 weeks?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Heart disease	A. Have you ever been diagnosed with <i>Angina/ heart attack/heart disease</i> ?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	B. In the last 12 months have you experienced <i>any pain or discomfort</i> in your chest when you walk uphill or hurry or normal walking?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Stroke	A. Have you ever been told by a health professional that you have had a <i>Stroke</i> ?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	B. In the last 12 months have you suffered from <i>sudden onset of paralysis or weakness</i> in your arms or legs on one side of your body for more than 24 hours?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Blindness	A. Have you been diagnosed with <i>blindness</i> ?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	B. Do you have <i>difficulty with vision</i> (Answer No if you can see OK with glasses)?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Deafness	A. In the last 12 months, have you been diagnosed with <i>deafness</i> ?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	B. In the last 12 months do you have <i>Deafness or difficulty in hearing</i> for more than 3 months?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Dementia	A. Have you ever been diagnosed with <i>Dementia</i> ?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	B. Do you have <i>memory problem</i> which hinders your <i>Activities in Daily Life</i> ?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Alcohol disorder	A. Have you visited any doctor because of <i>Alcohol Habit</i> ?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	B. Are you <i>habituated to Alcohol</i> ?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Cancer	A. Have you ever been diagnosed with any type of <i>Cancer</i> ?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	B. <i>Not applicable</i>	NA
Chronic Kidney Diseases	A. Have you ever been diagnosed with a <i>long term Kidney problem</i> ?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	B. Have you ever been on <i>Dialysis</i> ?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Epilepsy	A. Have you ever been told by a health professional that you have <i>Epilepsy</i> ?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	B. Have you ever suffered from <i>sudden onset of seizure while at work or at rest</i> ?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Thyroid Disease	A. Have you ever been diagnosed with <i>Thyroid diseases</i> ?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	B. <i>Not applicable</i>	NA
Tuberculosis	A. Do you suffer from <i>TB</i> ?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	B. Are you under any treatment for <i>TB</i> ?	Yes <input type="checkbox"/> No <input type="checkbox"/>
Filariasis	A. Do you have <i>Filaria</i> ?	Yes <input type="checkbox"/> No <input type="checkbox"/>
	B. <i>Not applicable</i>	NA



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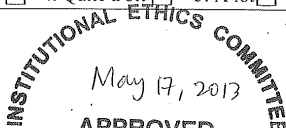
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[PATIENT CODE: _____]

24	DEPRESSION				
	Over the past 2 weeks, how often have you been bothered by any of the following problems:	Not at all	Several Days	More than half of the days	Nearly every Day
A	Little interest or pleasure in doing things	0	1	2	3
B	Feeling down, depressed, or hopeless.	0	1	2	3
<i>If a + b = 2 or more, continue to c. If not, then move to next condition</i>					
C	Trouble falling/staying asleep, sleeping too much.	0	1	2	3
D	Feeling tired or having little energy.	0	1	2	3
E	Poor appetite or overeating.	0	1	2	3
F	Feeling bad about yourself – or that you are a failure or have let yourself or your family down.	0	1	2	3
G	Trouble concentrating on things, such as reading the newspaper or watching television.	0	1	2	3
H	Moving or speaking so slowly that other people could have noticed. Or the opposite – being so fidgety or restless that you have been moving around a lot more than usual.	0	1	2	3
I	Thoughts that you would be better off dead or of hurting yourself in some way.	0	1	2	3
C.	Have you ever been to private health center for feeling sad/ depressed? (e.g. Clinic, hospital)	<input type="checkbox"/> Yes <input type="checkbox"/> No			
D.	Have you ever been to government hospital for feeling sad/ depressed?	<input type="checkbox"/> Yes <input type="checkbox"/> No			
<i>If Yes to C or D, then Ask E., If No, move to G</i>					
E	When did you last visit a doctor about feeling sad/ depressed? <i>Enter number of months(M) or years (Y) or Today (I)</i>M TY			
F	Where did you last visit for this condition? 1. PHC <input type="checkbox"/> 2. CHC <input type="checkbox"/> 3. SDH <input type="checkbox"/> 4. DH <input type="checkbox"/> 5. MCH <input type="checkbox"/> 6. Private <input type="checkbox"/>				
G	Have you ever been prescribed any medication for feeling sad/ depressed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA			
<i>If yes, continue to H. If no, go to J</i>					
H	If yes , are you still continuing it?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA			
I	If No , what was the reason for stopping it?				
J	Are you taking any medication for sadness/depression that wasn't prescribed by a doctor or nurse (e.g. you bought it at a pharmacy or given to you by a relative)?	<input type="checkbox"/> Yes <input type="checkbox"/> No			
K	Have you ever consulted any other treatment such as Ayurveda/ Traditional Healer/ Faith Healer etc for feeling sad/depressed ?				
L	How much is depression limiting your activities ? 1. Not at all <input type="checkbox"/> 2. A little <input type="checkbox"/> 3. Somewhat <input type="checkbox"/> 4. Quite a bit <input type="checkbox"/> 5. A lot <input type="checkbox"/>				



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25. Have you been diagnosed with depression by any physician? Yes No
26. Do you suffer from any other chronic health problems? Yes No

If yes, name them and indicate how much each problem is limiting you in your daily activities

- 1..... 1. Not at all 2.A little 3.Somewhat 4. Quite a bit 5. A lot
- 2..... 1. Not at all 2.A little 3.Somewhat 4. Quite a bit 5. A lot
- 3..... 1. Not at all 2.A little 3.Somewhat 4. Quite a bit 5. A lot

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[PATIENT CODE: _____]

SF-12v2™ Health Survey Scoring Demonstration

This survey asks for your views about your health. This information will help keep track of how you feel and how well you are able to do your usual activities.

Answer every question by selecting the answer as indicated. If you are unsure about how to answer a question, please give the best answer you can.

1. In general, would you say your health is:
 Excellent Very good Good Fair Poor

2. The following questions are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

	Yes, limited a lot	Yes, limited a little	No, not limited at all
A. <u>Moderate activities</u> , such as moving a table, pushing a vacuum cleaner, bowling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Climbing <u>several</u> flights of stairs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. During the past 4 weeks, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
A. <u>Accomplished less</u> than you would like	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Were limited in the <u>kind</u> of work or other activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. During the past 4 weeks, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
A. <u>Accomplished less</u> than you would like	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Did work or activities <u>less carefully than usual</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?



[PATIENT CODE: _____]

Not at all A little bit Moderately Quite a bit Extremely

6. These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling.

How much of the time during the past 4 weeks...

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
A. Have you felt calm and peaceful?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Did you have a lot of energy?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Have you felt downhearted and depressed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

7. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting friends, relatives, etc.)?

All of the time	Most of the time	Some of the time	A little of the time	None of the time
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Thank you for completing these questions!

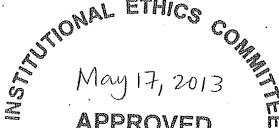
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[PATIENT CODE: _____]	1
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Disease name:

- | | | |
|---|--|---|
| Arthritis <input type="checkbox"/> | Heart disease <input type="checkbox"/> | Cancer <input type="checkbox"/> |
| Diabetes <input type="checkbox"/> | Stroke <input type="checkbox"/> | Chronic kidney disease <input type="checkbox"/> |
| Hypertension <input type="checkbox"/> | Blindness <input type="checkbox"/> | Epilepsy <input type="checkbox"/> |
| Chronic lung disease <input type="checkbox"/> | Deafness <input type="checkbox"/> | Thyroid <input type="checkbox"/> |
| Acid Peptic disease <input type="checkbox"/> | Dementia <input type="checkbox"/> | Tuberculosis <input type="checkbox"/> |
| Chronic back ache <input type="checkbox"/> | Alcohol <input type="checkbox"/> | Filaria <input type="checkbox"/> |

C.	Have you ever been to private health center for this condition? (e.g. Clinic, hospital)	<input type="checkbox"/> Yes <input type="checkbox"/> No
D.	Have you ever been to government hospital for this condition?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<i>If Yes to C or D, then Ask E., If No, move to G</i>		
E	When did you last visit a physician about this disease? <i>Enter number of months(M) or years (Y) or Today (T)</i>M TY
F	Where did you last visit for this condition? <input type="checkbox"/> 1. PHC <input type="checkbox"/> 2. CHC <input type="checkbox"/> 3. SDH <input type="checkbox"/> 4. DH <input type="checkbox"/> 5. MCH <input type="checkbox"/> 6. Private	
G	Have you ever been prescribed any medication/Inhaler/Hearing aid/ for this condition by a doctor?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
<i>If yes, continue to H. If no, go to J</i>		
H	If yes , are you still continuing it?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
I	If No , what was the reason for stopping it?	
J	Are you taking any medication for this condition that wasn't prescribed by a doctor or nurse? (e.g. you bought it at a pharmacy or given to you by a relative)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
K	Have you ever consulted any other treatment for this condition? <input type="checkbox"/> 1. Ayurveda <input type="checkbox"/> 2. Traditional Healer <input type="checkbox"/> 3. Faith Healer <input type="checkbox"/> 4. Home Remedy <input type="checkbox"/> 5. Others Specify ()	
L	How much is this condition limiting your activities ? <input type="checkbox"/> 1. Not at all <input type="checkbox"/> 2. A little <input type="checkbox"/> 3. Somewhat <input type="checkbox"/> 4. Quite a bit <input type="checkbox"/> 5. A lot	


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