Self-reported Symptom Burden Among Patients Attending Public Health Care Facilities in India: Looking through ICPC-3 Lens

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Research Article

Keywords: International Classification of Primary Care (ICPC), ICPC-3 classification, medical records, primary care

Posted Date: October 12th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-951282/v1>

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Abstract

Objectives: The objectives of this study were: 1) to describe the socio demographics and classify chief complaints and reason to visit facilities of patients presenting to public healthcare facilities; 2) To explore difference in these complaints and ICPC-3 groups across socio-demographic and health system level.

Design: Cross sectional study

Settings: This study was conducted in three districts of Odisha, India. Within each district, the District hospital, one SDH (if available), two CHCs and two PHCs were selected. Thus a total of three DHHs, three SDHs, six CHCs and six PHCs were covered. Two tertiary health care facilities were also be included. Patients aged 18 years and above, attending the Outpatient Departments (OPD) of sampled health facilities were chosen as study participants through systematic random sampling.

Results: In total 3044 patients were interviewed. In general, 65% of the sample reported symptoms as their chief complain for reason of encounter whereas 35% reported for disease and diagnosis. Most common reasons to encounter health facilities are fever, hypertension, abdominal pain, chest pain, arthritis, skin disease, cough, diabetes, and injury. Among symptoms categories, highest patients reported for general category (29%) followed by digestive system (16%). In the disease category circulatory system has the highest proportion followed by musculatory system. In symptom categories general, digestive and musculatory system were the key systems for reason of encounter in outpatient department irrespective of different groups of population. In terms of different tiers of health system, the top three reasons to visit OPD were dominated by circulatory system, respiratory system, musculatory system.

Conclusion: This is the first Indian study using ICPC-3 classification for all the three levels of health care. Irrespective of age, socio economic variables and tiers of healthcare top three groups to visit public health facility according to ICPC-3 classification were consistent i.e., general, digestive, and circulatory. Implementation of standard management and referral guidelines for common diseases under these group will improve the quality and burden at public health facilities in India.

Introduction

India public health system

India's public health care system has a three-tier structure comprising primary, secondary and tertiary levels. The primary health care services are provided by sub-centres and Primary Health Centres (PHCs), while Community Health Centres (CHCs) and sub-divisional hospitals (SDH) render secondary care. Tertiary health care is provided by district hospitals (DH) and medical college hospital under the directorate of medical education.[1] While secondary and tertiary level of care is usually shared between rural urban populations. Primary level care is different between rural and urban India. Unlike rural areas, there are no subcentres in urban area and community outreach services are provided are by female health workers, who report at Urban-PHC.[2]

Why symptom burden is important?

Symptom is a subjective term where the patient himself experiences the disease or physical disturbances and not manifested by the physician.[3] Usually, patient report with symptoms at the first encounter which are later on investigated to diagnose a disease. But there are studies suggesting that many physical symptoms remains unexplained even after thorough evaluation.[4, 5] Inability to address the symptoms have significant impact on the quality of life which leads to both psychological stress and functional decline among patients.[6] Therefore, symptom reporting and classifying in a standard way, is one of the important criteria to strengthen the primary care.

Why to use ICPC-3 classification?

Keeping in mind the different need of physicians and cover the gaps of International Classification of Diseases (ICD), International Classification of Primary Care (ICPC) was introduced mainly to understand the reason for contact with primary care.[7] The International Classification of Primary Care (ICPC) is the most widely used international classification for systematically capturing and ordering clinical information in primary care. It is developed and recently updated by the World Organization of Family Doctors' (WONCA) International Classification Committee (WICC) in December 2020.[8] ICPC is the most effective tool by which the need of the patient can be assessed by gathering all the information and correlating it. In primary care the physician comes in contact with a patient multiple time until diagnosis. ICPC helps in capturing the episodes of care (EoC). The collective gathering of information can help in quality of care, speedy diagnosis and increase knowledge of primary care practitioners.[8] For example, a single person has come in contact with the physician three times for a diagnosis, however, if there is a proper ICPC then the contact time can be minimized and there will be speedy diagnosis and treatment. It not only saves physician time but also the number of patients burdens in an outpatient. This also increases the efficiency and quality of the physician in the Primary health care. There was always a need for an international standard of reporting and monitoring disease which can lead to a common platform for and allows the physicians to share data in a standard way.[9] As always, the cause of mortality and morbidity is changing in that case an effective implementation of ICPC will be an effective tool in many ways. If we monitor and document the symptom burden of any country, then there can be equitable planning in health care distribution by giving the area what they need. The objectives of this study were:1) to describe the socio demographics of patients presenting to public healthcare facilities; 2) to document chief complaints and reasons to visit these facilities and classify them using ICPC-3; 3) To explore difference in these complaints and ICPC-3 groups across socio-demographic and health system level.

Methods

This cross-sectional study was conducted in Odisha, India. According to revenue zones of the state, the state is divided into three divisions such as central division (C.D.), north division (N.D.), south division (S.D.) with 10 districts each. There is one DH, 1 or 2 SDH and 3-6 CHCs in each district. It was planned to select three districts comprising one from each revenue division. Selected districts of Odisha were Cuttack, Sambalpur and Nabarangapur with proportionate representation from each types of facilities. The only exception was Nabarangapur district as there was no medical college. Within each district, the District hospital, one SDH (if available), two CHCs and two PHCs were selected. Thus a total of three DHHs, three SDHs, six CHCs and six PHCs were covered. Care was taken to include at least one NCD program implemented district. Two tertiary health care facilities Veer Surendra Sai Institute of Medical Sciences and Research, Burla formerly known as (VSS MCH), and Srirama Chandra Bhanja Medical College and Hospital, Cuttack (SCB MCH) were also included. A total of 3377 patients was proposed to be interviewed throughout the study, with proportionate representation from each facility. It was decided to include nearly 160 patients from PHC, 240 patients from CHC, 330 patients from DHH and 850 patients from MCH, thus making grand total of 3040 from three districts. After considering non-response rate of 10%, 3377 patients was proposed to be interviewed over three months of data collection period. Adult patients (more than 18 years) attending the Outpatient Departments (OPD) of sampled health facilities were chosen as study participants through systematic random sampling. A total number of eligible patients were recorded during one week of consultation at each site, the proportion of attendees in one week can be calculated in our sample accordingly. Informed consent of the participant was obtained prior to the interview. Participants were interviewed using a predesigned and pretested (Both Odia and English version) questionnaire while they are waiting to see their doctor or immediately after the consultation. The Odia-version of the instrument was pretested for feasibility on a small sample of non-study patients, and necessary revisions was made. The instrument was then back translated into English, and the questionnaire was evaluated for fidelity to the original intent or purpose of asking each question. Two trained field investigators collected data. The data was collected for the period of three months in 2016.

Certain categories of patients were excluded from self-reporting such as patients too ill to participate, insufficient cognitive ability, any physical or mental disabilities, hence data was collected by interviewing their attendants. To avoid duplication of any patient who have already been interviewed in any of our selected facility previously were excluded. Utmost care was taken to maintain confidentiality on data shared by the patient.

Extensive review of available literature was undertaken to gather all research studies pertaining to morbidity, its estimation, measurement, and correlates and extract relevant information. Inputs from expert group was incorporated. ICPC-3 coding was followed for coding of diseases/symptoms/reasons for encounter.

The study tool includes socio-demographic information (Age, sex, residence, ethnicity, religion, educational level (number of years of schooling), marital status, monthly income from all sources and monthly household expenditure current housing and household composition) and Insurance status including Rashtriya Swasth Bima Yojana (RSBY) and other insurance covered and used.

Unique chief complains were grouped and coded under ICPC-3. Patient having multiple complains were coded separately. Only chief complaints results are presented in this paper. For some of the common symptoms probable ICPC-3 codes were allocated as differential diagnosis for critical analysis. Once consented by all the authors finalized the codes for symptoms and new variables were created for further analysis.

After cleaning of the data, descriptive analysis was done to assess difference in symptom presentation across demographic indicators (age, sex, education, place of living), three levels of health care, behavioral risk factors (smoking, alcohol), and presence of chronic diseases. Data visualization tools were used to explore clustering of symptoms by system. Data entry was completed in the SPSS and data cleaning, analysis was done using R software.

Ethical approval

to conduct this study was obtained from Public Health Foundation of India (PHFI) research ethics committee. Necessary prior official permission was obtained to conduct the study at public health facility. The purpose and procedure of the study was disclosed to the participants and informed consent was obtained from them. All steps were taken to ensure that confidentiality and anonymity are maintained at all times.

Results

In total 3044 patients were interviewed. ICPC - 3 classification has been conducted for the samples with valid chief complains only, so further analysis has been done for the sample of 2568 as 476 respondents have not reported any chief complaints. As chief complaints of three patients were unable to comprehend, the data analysis excludes those subjects and the final data analyzed for 2565 patients.

We have combined samples from PHC and CHC and named it as primary, DHH as secondary and MCH as tertiary.

Table 1
Demographic features of the participant

Characteristics	Groups	Total N (%)	Primary N (%)	Secondary N (%)	Tertiary N (%)
Age Group (in years)	18-39	1324(51.6)	361(51.5)	679(51.8)	284(51.3)
	40-59	860(33.5)	221(31.5)	419(32)	220(39.7)
	60+	381(14.9)	119(17)	212(16.2)	50(9)
Gender	Female	1214(47.3)	373(53.2)	552(42.1)	289(52.2)
	Male	1351(52.7)	328(46.8)	758(57.9)	265(47.8)
Caste	SC	514(20)	145(20.70)	266(20.3)	103(18.6)
	ST	577(22.5)	251(35.8)	264(20.2)	62(11.2)
	General	1474(57.5)	305(43.5)	780(59.5)	389(70.2)
Residence	Urban	912(35.6)	56(8)	618(47.2)	238(43)
	Rural	1653(64.4)	645(92)	692(52.8)	316(57)
Education	No formal education	758(29.6)	217(31)	426(32.5)	115(20.8)
	Primary	955(37.2)	252(35.9)	453(34.6)	250(45.1)
	Secondary	662(25.8)	193(27.5)	316(24.1)	153(27.6)
	Graduation and above	190(7.4)	39(5.6)	115(8.8)	36(6.5)
Socioeconomic status	APL	1260(49.1)	266(37.9)	668(51)	326(58.8)
	BPL	1305(50.9)	435(62.1)	642(49)	228(41.2)
Social Insurance	No	1542(60.1)	426(60.8)	757(57.8)	359(64.8)
	Yes	915(35.7)	244(34.8)	491(37.5)	180(32.5)
	Did not know	108(4.2)	31(4.4)	62(4.7)	15(2.7)

SC- Schedule Caste, ST- Schedule Tribe, APL – Above Poverty Line, BPL- Below Poverty Line.

The socio demographic characteristics of the study participants shown in Table 1 illustrates 50% of the sample were in 18-39 years age group. 53% of the sample were male, 58% were from general category, 69% resides in rural area. More than a quarter of did not have any formal education (29%). More than half belongs to below poverty line (53.2%) and approximately two third of the sample had no health insurance coverage for health expenditure (60%).

Table 2
Stratification of reasons of encounter by ICPC – 3 system and subcategories.

ICPC-3 Groups	Total N (%)	D N (%)	S N (%)	Primary N (%)	Secondary N (%)	Tertiary N (%)
General	738(28.8)	116(4.5)	622(24.2)	250(35.7)	316(24.1)	172(31)
Digestive system	418(16.3)	63(2.5)	355(13.8)	98(14)	219(16.7)	101(18.2)
Musculatory system	393(15.3)	158(5.9)	241(9.4)	96(13.7)	227(17.3)	70(12.6)
Respiratory system	214(8.3)	113(4.4)	101(3.9)	71(10.1)	115(8.8)	28(5.1)
Circulatory system	190(7.4)	178(6.9)	12(0.5)	46(6.6)	111(8.5)	33(6)
Skin	150(5.8)	38(1.5)	112(4.4)	40(5.7)	76(5.8)	34(6.1)
Neurological system	140(5.5)	28(91.1)	112(4.4)	25(3.6)	68(5.2)	47(8.5)
Endocrine system	87(3.4)	86(3.4)	1(0.0)	9(1.3)	51(3.9)	27(4.9)
Pregnancy and Childbearing	80(3.1)	80(3.1)	0(0)	35(5)	44(3.4)	1(0.2)
Urinary system	41(1.6)	14(0.5)	27(1.1)	3(0.4)	23(1.8)	15(2.7)
Eye	39(1.5)	13(0.5)	26(1)	10(1.4)	20(1.5)	9(1.6)
Ear	27(1.1)	0(0)	27(1.1)	10(1.4)	13(1)	4(0.7)
Blood	23(0.9)	23(0.9)	0(0)	1(0.1)	20(1.5)	2(0.4)
Genital system	22(0.9)	3(0.1)	19(0.7)	6(0.9)	5(0.4)	11(2)
Psychological system	3(0.1)	2(0.1)	1(0.0)	1(0.1)	2(0.2)	0(0)
Total	2565(100)	909(35.4)	1656(64.6)	701(100)	1310(100)	554(100)
Note: D- Diagnosis and diseases, S- Symptoms, ICPC- International Classification of Primary Care						

ICPC – 3 divides reasons of encounter at the primary health centers into 19 chapters, out of which our sample reported for 15 categories (Table 2). Chapters like social problems (ZC), intervention and processes and functioning related (2F) have not reported in outpatient in our sample. Each chapter is divided into two components. The components deal with (S) symptoms and complaints; and (D) diseases and diagnosis. In general, 65% of the sample reported symptoms as their chief complain for reason of encounter whereas 35% reported for disease and diagnosis. Among different categories, highest patients reported for general category (29%) followed by digestive system (16%) which is reflected in symptom category as well. In the disease category circulatory system has the highest proportion followed by musculatory system.

The reasons of encounter for different demographic and related variables have been described in figure 1. In the 18-39 years age group, pregnancy and childbearing is the most frequent cause of visit to the facility whereas in both 40-59 as well 60+ age group circulatory and musculatory system were the main cause. Within sex both male and female present highest in circulatory system whereas females in addition have pregnancy and childbearing related visits which in male is musculatory reasons in the second position. Across different categories of caste general category are coming for mainly circulatory, musculatory and respiratory problems whereas in SC & ST categories the primary reason is general complaint. In Urban residence, frequent respiratory problem persists in addition to circulatory and musculatory system, whereas in rural areas respiratory complains has been substituted with general problems. Not much difference found across different educational categories. In well off population respiratory complaints predominates over musculatory and circulatory system. In symptom categories general, digestive and musculatory system were the key systems for reason of encounter in outpatient department irrespective of different groups of population.

In terms of different tiers of health system, the top three reasons to visit OPD were dominated by circulatory system, respiratory system, musculatory system. Patients with diabetes are visiting more to the highest level of health facility which is not reflected in other health facilities. Though gate keeping mechanism is in place, still a significant proportion of the population visits medical college and hospitals for general conditions such as abdominal pain, vomiting, fever etc.

Figure 2 explores the variation in top 16 reasons of encounters across different levels of health care facilities. Fever is the most common reason across all health facility. While Type 2 diabetes and skin disease is most commonly reported at district hospital. General abdominal pain is reported at district and medical college level. Among the top reasons only fever, pregnancy and hypertension are handled at primary health care level.

Figure 3: Word cloud explore the reason of most common reasons for patient visiting public health facility. Most common reasons are fever, hypertension, abdominal pain, chest pain, arthritis, skin disease, cough, diabetes, and injury.

Discussion

The study indicates that majority consumers of the public health out-patient services were of younger age group, educated up to primary, and rural resident. Most common complaints in all three tiers are general, musculatory and digestive system. Symptoms of circulatory and musculatory system increases with age and respiratory system decreases with age. Interestingly women to be availing health services at par with their male counterparts irrespective of their education status. Traditionally the healthcare seeking behavior of the females and expenditure have remained below optimal. [10, 11] Finding from this study is indicative of familiarization of healthcare services among women, potential reason could be increased involvement of frontline workers, women self-help groups and various state health policies like Odisha health equity strategy, Odisha livelihood mission etc.[12, 13] Also, few other studies from India outpatient departments show equal distribution of both gender. [14, 15] Like our study majority of patients availing health services in public health facility were from productive age group.[14–17] Despite the fact that 50% of our study participants were below poverty line who are supposed to be covered under Rashtriya Swasth Bima Yojana (RSBY) in India, [18] about 60% of the population wasn't covered under any health insurance scheme in our study, this finding is similar to other studies from India.[19–21] Though, studies from South India shows high health insurance awareness.[22, 23]

Poor utilization of public primary health services in urban area could be because of exclusion of Urban-PHCs from our study. But the huge difference between rural and urban highlights the need to establish a strong urban primary healthcare in India.[24] Majority of people utilizing primary care are from BPL families while in secondary and tertiary care there is equal distribution. Other studies from India also shows that majority of patients' belonged to lower socioeconomic class.[14, 17, 25] As most people visit primary health facility for pregnancy related issues, this shows that number of encounters related to pregnancy and childbearing are part of the primary care services in a programmatic mode. Other studies from India also shows that women have more trust and better care at lower level of health facilities especially for uncomplicated pregnancies.[26] National family and health survey also highlights the improved maternal and child care in the state.[27] But, among the other top reasons to visit health facility, primary health facilities are accessed only for fever and hypertension. This highlight low level of facilities at primary health care level in India.

Most common reasons to encounter at public health facilities are fever, abdominal pain, chest pain, diabetes, hypertension, arthritis, skin disease, cough, and injury. The pattern of dual burden of disease is reflected among our sample as the earliest symptom of any infection is fever which is the foremost reason to visit OPD in all levels of facilities followed by hypertension. Our previous study from have also listed these as common diseases.[15, 28]

There is high burden of skin diseases in India with very limited facilities at primary health care. Training of allopathic doctors in dermatology during their graduate degree is still minimal, therefore management skills among graduate doctors for these diseases remains subtle.[29] In addition, there is scarcity of dermatologist in India. As most of the common skin diseases diagnosis is based on visual inspection, tele-dermatology could be one way to suffuse the existing gap in primary care.[30]

Irrespective of age, socio economic variables and tiers of healthcare top three groups to visit public health facility according to ICPC-3 classification were consistent i.e., general, digestive, and circulatory. So primary care and health insurance schemes should address these three issues adequately for a comprehensive health care. Low reporting of psychological symptoms is not reflecting true burden. This could be owing to two factors, first lack of mental health literacy and appraisal of own or family member mental symptoms, second lack of ability of primary care physicians recognize psychological symptoms as a result psychological symptom still associated with stigma within society. All these have resulted in cumulative disconnect between psychiatry care and primary health services. Our previous study have shown that people prefer to directly consult a mental health specialist for their psychological symptoms rather than approaching to primary health care.[31] Thus, circumventing public healthcare systems.

This is the first study from India reporting symptom burden at all the three levels of public health facilities in India using ICPC 3 classification. However there are few limitations; firstly, the principle of primary healthcare is holistic which should include physical mental and social. Accordingly, ICPC-3 has kept chapter on social problems. However, we could not find any reported reason of encounter in this chapter in our study participants. System appraisal for cognitive functioning and ADL appear to be low, since participants did not mention it in their chief complaint. One of the reasons could be our questionnaire did not have any probes to elicit such complaints. Social problems including domestic violence, neglect, abuse, self-harm is less likely to be reported to the primary care. Secondly, we have excluded Urban-PHCs in our sample, therefore, there is under reporting of urban poor in our study.

Conclusion

High symptom burden of general, digestive and circulatory system demands for proper clinical management and referral guidelines for these diseases at primary health care level for timely management and decreasing burden of higher health facilities. High burden of skin diseases and low reporting of mental health problems at primary health care necessitates primary care physician capacity building and incorporation of specialist tele-consultation for these diseases at primary health care level.

Declarations

Acknowledgments

The authors are grateful the state health authority, the medical officers of the participating health care institutions and the outpatients attending these facilities for their kind cooperation and timely support. We also are thankful Dr Subhashisa Swain for his valuable inputs.

Competing Interests:

The authors declare no competing interest. Individual ICMJE forms have been uploaded.

Author contribution

Sanghamitra Pati conceptualized the study and supervised the whole process. All authors provided intellectual input into the evaluation design and methodology of this paper. Kirti Sundar Sahu and Bhavna Bharati cleaned, analyzed the data and wrote the first draft. Priti Gupta and Pranab Mahapatra have helped in interpretation of data and finalized the manuscript. All authors contributed to, reviewed, and approved the manuscript.

Ethics approval and Consent to participate:

Ethics approval was obtained from PHFI research ethic committee. Ethics approval number is 288/State Research and Ethics Committee/13/11/2014. The purpose and procedure of the study was disclosed to the participants and informed consent was obtained from them. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Funding:

This study had received funding from the Department of Health & Family welfare, Government of Odisha, India. Grant Number is 308/ SHRMU dated 25/11/2014. The Principal Investigator, who is the corresponding author of this study had the final decision to publish.

Data sharing

The data used for this study is available with the corresponding author and can be shared upon reasonable request and prior approval of the State Health & Family Welfare department.

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Figures

Figure 1

Distribution of ICPC-3 disease categories across different parameters

Figure 2

Top 16 reasons of encounter by facilities

Figure 3

Word cloud of patient reported reasons of encounter