International Classification of Primary Care: An Indian Experience

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Abstract

Background: India is in the process of transition to universal health coverage for Indian citizens. The focus is to strengthen the primary and secondary level services. Coupled with this national scenario, the development of Family medicine as a distinct discipline is in a crucial stage. There is a nation-wide urge to build family medicine training units and service centers across the country to fulfill the unmet health needs of the population. Objectives: This study aimed to bring out reasons for encounter (RFE) and morbidity pattern of patients seen in a family physician run urban health center in South India. Methods: The study was conducted in an urban health center of a tertiary care hospital. Clinicians entered the data using International Classification of Primary Care (ICPC) codes. Data included were demographics, 3 RFE, 3 diagnoses, 3 outcomes of care that include prescriptions, investigations, procedures, and referrals made. Results: During 47,590 patient encounters, 59,647 RFE, 62,283 diagnoses and 68269 outcomes of care were recorded. The majority of RFEs and diagnoses are in the following ICPC chapters: Endocrinology (38.6%), cardiovascular (35.91%), respiratory (20.26%), digestive (7.68%) and musculo-skeletal (6.8%). The most frequent outcome of care was prescriptions, followed by counseling and nebulization. Conclusion: This study is the first to report on the RFE in India. This study demonstrated the breadth of clinical conditions seen by family physicians across all ages and in both genders. This study attempts to highlight the need for family physician based services as a training ground for trainees.

Keywords: Family medicine, multi-morbidity, reason for encounter

Introduction

The high-level expert group instituted by the Planning Commission of India submitted the report on Universal Health Coverage for Indian citizens in November 2011.[1] It envisages a major role for primary health care that includes promotive, preventive, curative and rehabilitative services delivered to individuals and populations. The report details packages of services to cover common conditions in a basket of cost-effective care interventions corresponding to disease burdens at different levels of care.

India's commitment in 1983 through the National Health Policy toward comprehensive primary care has predominantly favored centrally designed vertical programs only.[2] Primary health centers largely revolve around the delivery of vertical programs directed against single diseases. Besides this, episodic care for acute conditions is handled at these government health centers and in private general practice clinics.

Of the many challenges that India faces in the strengthening of existing primary health care services is the absence of a specialized cadre of health professionals trained to tackle the wide breadth of common acute and chronic conditions in the community. India is finally waking up to the need of this specialized cadre of generalists/family doctors/family physicians/family medicine specialists. The role of generalists in the country has largely been defined by MBBS graduates who fulfill their compulsory rural services prior to specialization. The health system in the country has not visualized the role of family doctors as gate-keepers or health advocates for patients.

Family physicians’ approach to the patient is driven by the patients’ perceived symptoms. Symptom- based approach facilitates holistic care by including social and environmental causes of ill-health.[3] These fundamental features of family medicine have not been explored, documented, analyzed or...
evaluated in India. Information on these clinical services can serve as a powerful tool for planning and implement longitudinal and comprehensive care at the primary and secondary care level services.

Literature has shown that coding clinical data improves quality-of-care. Besides the need for coding, family physicians worldwide have found it difficult to use International Classification of Diseases (ICD). ICD only reflects the “objective” patients’ need from a medical perspective. Patients’ “subjective” demands of care are not represented. Recognizing the specific need of family physicians, World Health Organization in 1978 with many World Organization of National Colleges, Academies and Academic Associations of General Practitioners/Family Physicians members came up with a comprehensive International Classification of Primary Care (ICPC) that includes patients’ objective and subjective needs. This incorporates the 3 structural elements that describe the family physicians’ patient encounter known as the consultation:

- Patients’ reasons for encounter (RFE)
- Family physicians’ diagnostic labels
- Interventions – process outcome.

The development of family medicine as a clinical specialty and an academic discipline is in its most vibrant stage in India. A study of the content of family practice based on the RFE is imperative for information on education and policy making. We, therefore, conducted a morbidity study of patients seeking care in our ambulatory care service using ICPC with the following objectives:

- To determine the RFE
- To illustrate the pattern of morbidity.

Study design
A retrospective study of patient encounters in the ambulatory care service of the urban health center was done between October 2011 and September 2012 using ICPC.

Setting
The study was conducted in the urban health center of a tertiary hospital that provide clinical services to a population of 200,000. The health center is run by family physicians, with support from community medicine faculty, nurses, medical officers, postgraduate trainees, and interns. The health center is supported by the tertiary care hospital for specialist services and referrals to the emergency room. The population served is predominantly from the surrounding urban areas. The facility also provides in-patient care and low-risk antenatal and delivery services for the population served.

Data collection
International Classification of Primary Care has a biaxial structure with 17 chapters on one axis and seven components on the other. The first axis is coded by a letter that identifies the various body systems. The second axis is split into seven components that reflect the various aspects of the consultation. Each component has a list of standardized rubrics that are coded by two-digit numeric code. The letter from the corresponding chapter combined with the two-digit numeric code gives the final classification.

All the members of the team were explained of the details of data entry for every patient encounter. Coding was done at the time of the patient encounter by clinicians. It was done electronically using an open spreadsheet document and saved as softcopy. The data included were the age and sex of each patient and up to 3 RFEs, 3 diagnoses and 3 process outcomes of care for each consultation. The process outcome recorded includes investigations ordered, outpatient procedures done, medication prescribed and specialist services requested or referrals made. Details on admission were also recorded.

Analysis
The combined data set over 1-year period was analyzed using SPSS 17th edition. Descriptive statistics using frequency were calculated for age, gender, RFE, diagnosis and process outcome. The mean number of RFEs, diagnosis and process outcome for a single consultation was calculated.

Results
A total of 47,590 patient encounters were documented in the 1-year period as shown in Table 1. This generated 59,647 RFE, 62,283 diagnoses and 68,269 outcome processes. This showed a mean of 1.22 RFE, 1.28 diagnoses and 1.40 care processes in one consultation.

Age- and sex-based distribution of consultations is shown in Figure 1. The distribution shows that the majority of our patients are in the middle age group. Women were seen in 33,636 (70.7%) and men in 13,784 (29%) consultations.

Based on the distribution of the top 20 RFEs [Table 2], patients seen for follow-up of chronic conditions accounted for 30% of the consultations. Approximately, 44% of the encounters were symptom related. Respiratory and general symptoms apart from headache were the most commonly noted RFEs. There was a striking absence of psycho-social problems and substance abuse cessation in the top 20 RFEs.

The top 20 diagnoses are listed in Table 3. It represents 90% of all the diagnoses encountered in our health center. Diabetes is by far the most common diagnosis. Acute conditions related to respiratory, digestive, general and urinary systems.

### Table 1: Number of patient encounters, reason for encounters and diagnoses

| No. of consultation | 48625 | N/A  
|---------------------|------|----- 
| No. of RFE          | 59791| No of RFE per patient-1.28  
| No. of diagnosis    | 62283| No. of diagnosis per patient-1.22  
| No. of processes    | 68269| No. of processes per patient-1.40  

RFE: Reason for encounter
accounted for 25% of all diagnoses. Depression was the most common psychiatric condition diagnosed. Problems in blood/immunological, ear, nose and throat, eye, gynecological, male genital, dermatological and social conditions were noted in small proportions. Fewer consultations were documented for exclusive preventive care (1.5%) while age-appropriate screening was routinely done in most encounters.

Prescriptions are the most common among the various outcomes of care as shown in Table 4. The top 3 procedures recorded were nebulization (3908), wound dressing (3516) and incision and drainage (76). Pathological tests ordered include blood and urine tests apart from sputum and pap smears. Imaging studies (X-ray, ultrasound, computed tomography and magnetic resonance imaging) represent 0.85% and electrical tracings (electrocardiography, electroencephalography and continuous cardiocotography) account for 0.18% of all the outcomes of care.

Invalid entries due to subjective inaccuracies, in coding, were found to be 4.5% for RFE, for diagnosis 4.8% and for process outcome 1.4%.

Discussion

The findings illustrate the morbidity pattern in the health center that includes considerable breadth of RFEs (523 categories) and diagnoses (557 categories). This is the first report in India on family physicians' domain of managing symptoms not limited by age, sex, disease or organs. Family Medicine is built on this broad base of knowledge that span across all ages. This breadth of knowledge gets strengthened by patient-physician relationship that builds over time while seeking care for various complaints.[7]

The striking difference in the sex-distribution of our patients can be explained by the availability of clinical services during the week days between 8 am and 4 pm favoring women at home. Patients between 40 and 60 years predominate among all age groups primarily for on-going management of chronic

Table 3: Top 20 diagnosis

| ICPC code          | Frequency | Percentage |
|--------------------|-----------|------------|
| T90 (Type 2 diabetes) | 14481     | 31.2       |
| K86 (Hypertension)  | 12956     | 27.95      |
| R74 (Upper respiratory infection) | 4625 | 9.98 |
| D86 (Peptic ulcer other) | 1720 | 3.7 |
| R96 (Asthma)        | 1685      | 3.6        |
| K71 (Rheumatic fever/heart disease) | 1482 | 3.1 |
| T86 (Hypothyroidism) | 1250      | 2.6        |
| T89 (Insulin dependent type 2 diabetes) | 887 | 1.9 |
| N88 (Epilepsy)      | 736       | 1.5        |
| A98 (Health maintenance) | 734 | 1.5 |
| L90 (Osteoarthrosis of knee) | 677 | 1.46 |
| R95 (Chronic obstructive pulmonary disease) | 654 | 1.41 |
| L99 (Musculoskeletal disease others) | 646 | 1.39 |
| R78 (Bronchitis)    | 641       | 1.38       |
| U71 (Cystitis)      | 532       | 1.14       |
| A77 (Viral disease) | 486       | 1.04       |
| A99 (General disease) | 470 | 1.01 |
| R81 (Pneumonia)     | 439       | 0.94       |
| T82 (Obesity)       | 437       | 0.94       |
| P76 (Depressive disorder) | 429 | 0.92 |

Table 4: Outcomes of care

| Process/code          | Frequency | Percentage |
|-----------------------|-----------|------------|
| Prescriptions/50      | 51370     | 75         |
| Education/advice/45   | 11362     | 29         |
| Blood test/34         | 2504      | 3.66       |
| Urine test/35         | 764       | 1.11       |
| Imaging/41            | 585       | 0.85       |
| Nebulization/59       | 182       | 0.26       |
| Electrical tracing/42 | 124       | 0.18       |
| Microbiological test/33 | 102 | 0.15 |
| Incise/drain/52       | 76        | 0.11       |
| Histological/37       | 101       | 0.1        |

RFE: Reason for encounter; COPD: Chronic obstructive pulmonary disease
The role of a family
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ICPC was primarily
This requires training in specific clinical
Most importantly, this echoes the
keeping with the morbidity pattern and patients’ demand for
The most common outcome of care was prescriptions in
such care. Very low referral rate (0.72%) and fewer procedures
Comparison to literature
As noted in the various studies ICPC enables to retrieve, gather and analyze the health problems as perceived by patients, appreciated by the provider and managed by both. ICPC widens the scope and reflects the true variations of primary care data in a family physicians’ practice than ICD. Also including communication tool as one of the interventions of clinical care, the richness of family physicians’ consultation can be clearly documented.
In comparison with the burden of disease in India, childhood illnesses like diarrhea, pneumonia and noncommunicable diseases are well represented in our practice population. However conditions such as tuberculosis, HIV, injuries and accidents are less noted in our practice. On-going care for these infections is predominantly provided by the government hospitals. Injuries are seen at the near-by tertiary hospital. Mental illnesses and substance abuse are less recognized, though 6.5% of Indian population is reported to have a serious mental illness. This is suggestive of the poor appreciation of these symptoms in the existing primary and secondary level services in the country. Furthermore, it may reflect the health seeking behavior of the community for these symptoms that is well-limited by the cultural influences.

The higher mean number of RFE and diagnoses in a single consultation represent the multi-morbidity and the complexity of encounters in our health center. Single complex diseases are well conceptualized and managed by the in-depth expertise of sub-specialists. However, the larger clientele of a family practice represent complex patients with multiple chronic illnesses in an intricate social network. Most importantly, this echoes the fact that primary care practitioners can use only some of the knowledge generated by specialty oriented research.

The top 20 RFEs covered 65% all symptom/complaint RFE. Documenting symptoms is the most important outcome of our study. It accounts for patients’ perspective of the cause of disease that is an integral part of the consultation. It’s the first of its kind in India, acknowledging the birth of family medicine services. In addition, coding for patient symptoms has enabled us to quantify patients’ concerns, illness experience, serious illness in early stages and diversity of medical complaints that define the profile of family physicians’ clientele. Finally, symptoms not accompanied by objective findings at the initial encounter were given symptom diagnosis and managed by the seriousness of the condition. This supports the concept of RFE as a core element of consultation with a family physician. The role of a family physician in integrating the bio-psycho-social problems, prioritize based on red flags, relate to the social context and connect to the specialist care when needed begins with patients’ symptoms. This integrated person-centered approach is a key domain of family medicine training that can well strengthen the primary care services in India.

Among the top 20 diagnosis, diabetes is the most common diagnosis. About 31% of visits were related to diabetes care. Apart from diabetes and hypertension, the most common conditions ranged in frequency from 1.4% to 9% individually. The top 20 diagnoses totaled for 80% of the medical conditions seen in the health center. Prevalence of uncommon conditions is low. The important finding is common entities are very common, beyond this; the prevalence of any single condition is low. This brings out that primary care data is different from specialty and hospital-based data. Obviously, primary care data collection model need to take into account prevalence issues, complexity of the encounter, course of the disease and longitudinal person-oriented information over time. ICPC was primarily constituted to fulfill these needs.

The most common outcome of care seen was prescriptions in keeping with the morbidity pattern and patients’ demand for conditions. This reflects the trend in disease burden nationally. Children under 10 years were primarily seen for respiratory and gastrointestinal infections apart from undiagnosed symptoms. Undifferentiated illnesses seen in primary care defy categorization and specialist approach. Management of uncertainty is a key general practice skill. This requires training in specific clinical skills of understanding the natural history of various conditions, behavioral sciences and communication skills.

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Methodological weakness
The study limited to ambulatory service alone reflects the morbidity in an urban slum in South India. It only shows the most common RFEs and diagnoses. The coding was done by physicians while doing clinical practice. This accounts for some omissions in RFEs, diagnoses and process codes due to individual errors.

Implications and recommendations
Strengthening of existing primary care services in India needs a baseline profile of primary care. Morbidity data from our health center is a fragment of such primary care data representing various presentations to primary care. Future primary care clinicians need skills training for effective, evidence based approach to these presentations. Significantly, paucity of training in social and psychological aspects of care in existing medical education needs attention.
The results highlight the need for family physician based services as training grounds for future trainees. Currently, India’s community health centers, district and taluk hospitals that are proposed by the Medical Council of India as training locations for specialization in Family medicine do not have such human resources. Clinical services in these locations are managed by pentagram of specialists – internists, pediatricians, surgeons and obstetricians. Though specific skill sets can be learnt here, the competencies in Family Medicine need supervision and assessment by family physicians and/or family medicine oriented clinicians in family medicine centers.

The study provides useful feedback to medical educators in India on the current mismatch of medical education that is largely based in tertiary care centers that represents morbidity of rare diseases and the minimal exposure to primary care services that represents common problems. It supports a paradigm shift in the approach to the patient as a person with bio-medical and psych-social issues and not a mere constellation of diseases. The study reflects the need for a single patient-centered service for all common health problems in the community. Such a service can deal with the multiple problems that the patient presents rather than providing fragmented care associated with vertically driven preventive health programs for single diseases that are currently practiced. Finally, the study has illustrated that consultations without investigations and/or prescriptions is very much a need and valued in the community.

**Conclusion**

Family physician run ambulatory services to health care seekers across all age groups that provide care for acute and chronic conditions including health promotion, prevention, rehabilitation and palliative care under one roof is in infancy in India. This study carried out in one of those centers has identified the common RFE and outcome of care apart from the common diagnosis. In the process of evaluating primary care services, episode of care as the core-concept in family medicine is the primary epidemiological tool to assess if a clinician has provided services for the local health needs. Studies have shown clearly that comprehensive coding of episodes of care in various countries has provided reliable estimations of prior probabilities of common diseases in a given setting. Similar studies using ICPC coding of clinical encounters in other parts of the country can direct the curriculum for training medical students and other primary care providers to deal with common problems in the community.

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