

Profile of Diseases Prevalent in a Tribal Locality in Jharkhand, India: A Family Medicine Practitioner's Perspective

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ABSTRACT

Background: Majority of Indian population is dependent on general practitioners (GPs) for medical services at primary care level in India. They are most preferred and considered to be first contact person for medical services at primary care level. But advances in medical science has put more emphasis on specialist culture and average Bachelor of Medicine and Bachelor of Surgery (MBBS) graduates who are working as general physician are gradually feeling themselves less competent because they are less exposed to latest advances in treatment of diseases. Amidst such scenario, Christian Medical College (CMC) has come up with an idea: "The refer less and resolve more initiative". It has started a decentralized 2-year family medicine distance diploma course (Postgraduate Diploma in Family Medicine (PGDFM)) now accredited by Dr. MGR Medical University, Chennai, Tamil Nadu, that trains the GPs to become family medicine specialist. **Materials and Methods:** As component of PGDFM course, this study was conducted to provide better understanding of prevalent ailments and common treatment provided by the GPs in the community at present giving key insight of current practice in rural area by a registered family medicine practitioner. **Results:** As part of study, among 500 patients evaluated, three most common diagnosis were upper respiratory infections (URIs; 18%), acute gastroenteritis including water-borne diseases (15.8%), and anemia (10.4%). Treatment given to these patients comprised of mostly of antipyretic, analgesic, and antimicrobial agents. Most common drug prescribed was paracetamol for fever. Other common drugs prescribed were amoxicillin/clavulanic acid, chloroquine, artemisin derivative, doxycycline, co-trimoxazole, miltefosine, cephalexin, ceftriaxone sodium, cefixime, oral rehydration salts, ranitidine, omeprazole, pantoprazole, metronidazole, albendazole, ondansetron, diclofenac sodium, piroxicam, ibuprofen, diphenhydramine, codeine-sulfate, amlodipine, ramipril, hydrochlorothiazide, atenolol, salbutamol, etophylline, metformin, glimepiride, fluoxetine, flavoxate, tamsulosin, iron-folic acid, etc. The fact that three or more drugs are given in most of the prescriptions, can be justified due to multiple morbidity and the severity of disease than to irresponsible prescribing.

Keywords: Bachelor of Medicine and Bachelor of Surgery, below poverty line, Christian Medical College Vellore, General Practitioner, Post Graduate Diploma in Family Medicine

Introduction

After independence, India has experienced marked epidemiological transition due to change in disease pattern, improvement in the nutritional and health infrastructure, eradication and control of major killer diseases, and socioeconomic development. But even after more than 6 decades of self-governance, these health achievements are not withstanding. The burden of disease is still high due to large-scale poverty, developmental disparities between states, gender discrimination, growing aged population, and failure of government policies to deal with rural-urban divide

in terms of provision of health facility both in government and private sector.^[1,2]

Majority of Indian population is dependent on medical services provided at primary care level by general practitioners (GPs). GPs constitute an important source of medical care in India, especially in the rural areas. They are the most preferred and considered to be the first contact person for medical services at primary care level in India. Preference for the GPs is observed in the treatment of common diseases like diarrhea, acute respiratory tract infections, tuberculosis (TB), malaria, typhoid, etc., as well as their consultation is sought for specific medical diseases like, hypertension, diabetes, cardiovascular diseases, strokes, skin diseases, pediatric diseases, obstetric and gynecologic diseases,

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ophthalmic diseases, and common surgical conditions like injuries, neglected surgical wounds associated with diabetes, etc., where GPs have to refer most of these patients to higher center mainly due to lack of proper training for concerned specialties in medical colleges during their Bachelor of Medicine and Bachelor of Surgery (MBBS) courses.^[3-5]

Excessive referrals and the “Specialist” culture are proving to be very expensive for common man and will only get worse in future. Reduction of referrals and more emphasis on “Generalist” culture can significantly reduce healthcare expenditure by average lower middle class common man who is regularly being pushed to below poverty line (BPL) category due to these unexpected financial burdens. If the GPs could be made multicompetent and empowered to refer less, certainly the healthcare cost can be reduced substantially.

More than 90% of the illness affecting the population can be effectively managed by properly trained family physician. This will significantly reduce cost and bring rationality in management of illness. Medical profession owes it to the people of India to provide evidence-based quality healthcare without subjecting them to unnecessary investigation and interventions. Postgraduate Diploma in Family Medicine (PGDFM) program; a decentralized 2-year family medicine distance diploma accredited by Christian Medical College (CMC), Vellore; is an initiative that trains the GPs to become family medicine specialists. In a mostly privatized healthcare system like in India, the quality of care depends on great deal on the availability of good family medicine specialists. ‘Family medicine practitioner’ is a multicompetent specialist who not only provides the point of first contact but also provides the continuum of care. As candidates pursuing PGDFM course and as part of this study, one would actually be providing current practice with available resources in their locality. It is anticipated that this study would provide better understanding of how patients are cared for by the GPs in the community; help quality assurance by looking at the trend over the years and provide important information for policy makers to provide appropriate continuous professional development in the country. It could be safely expected that this study would have three-fold impact; improving the quality of general practice, increasing ethical awareness, and increasing public health involvement at large.

Materials and Methods

This study is aimed to look into what and how medical services are provided at primary care level in India. Detailed clinical information of 500 consultations were recorded in the datasheet as per project guidelines. Place of consultation and compiling data was private clinic of Dr Sumit Kumar located at Kathikund, which is a small locality situated 25 km away from town of Dumka (Jharkhand). Native locality of the clinic consists of mixed population with continuous presence of tribal population who come down from their inhabitation in mountains for

purchasing in local market and also for seeking treatment for their ailments. No discrimination regarding age, sex, and race of patients was done for inclusion in the study. Diagnosis of the diseases was mostly done on clinical examination due to lack of good laboratory services. Diagnostic X-ray facility is available, which is run under private ownership for help in diagnosis locally and facility for complete blood counts, estimation of hemoglobin (Hb), erythrocyte sedimentation rate (ESR), bleeding time (BT), clotting time (CT), microscopic examination for malarial parasite in blood film, routine examination of urine, and microscopy center for sputum smears for diagnosis of TB is available for the patients both in government run primary health center and in private laboratories. Rapid serologic test for diagnosis of malaria, kala-azar, and typhoid are available in private laboratory situated here and they claim to have tie-up with some of the reputed labs in nearby town Dumka and they send the samples to these laboratories for investigation. Very few locally situated laboratories are run by properly trained technicians; therefore, single marked laboratory was preferred for all blood investigations if necessary and close monitoring for quality assurance of the laboratory was done. Clinical information of first five consultations for 100 consecutive days of outpatient (OP) clinic days was recorded in separate datasheet for each patient from the month of March to August 2013. Out of total 500 patients, three most common diagnoses among them would be dealt separately along with reasons which make these common and how a family physician can address the min holistic way. Diagnostic data of these 500 patients will be compiled using appropriate charts, tables, graphs, and figures, etc., and analyzed accordingly.

Study design

Cross-sectional study.

Duration of study

Around 6 months.

Place of study

Clinic of Dr Sumit Kumar located at Kathikund, Dumka, Jharkhand.

Inclusion and exclusion criteria

No discrimination regarding age, sex, and race of patients was done for inclusion in the study. Patients were only included in the study who were willing to get treatment at the center and not willing to go to town for treatment. Although they were informed that they can go to town for better treatment if they like, but they would intimate the primary physician in this regard. Those patients who were first enrolled, but lost to follow-up were excluded from the study.

Study population

Around 500 male and female patients. Those patients below 12 years of age were studied separately as children.

Ethical Issues

Study was conducted as part of PGDFM course from CMC and Hospital, Vellore, India. There was not any intervention or any deviation from standard treatment. Most of the patients were illiterate, so they were informed about the study in simple language and consent was taken verbally as they were feeling apprehensive in giving left thumb impression on consent form.

Statistical methods

Diagnostic data of these 500 patients will be compiled using appropriate charts, tables, graphs, figures, etc., and analyzed accordingly. Simple statistical methods as percentage, ratio, etc., would be used for understanding and analyzing the data from the study.

Observations

All patients were compiled separately into three groups viz. children (age less than 12 years), adult females, and adult males. Relevant details regarding number for each age group of patients out of total of 500 patients who were selected for the study as per inclusion criteria are depicted in the Figure 1.

The patient age pattern attending the clinic clearly shows that economically productive younger population is maximum affected in this locality. Recent population survey of country in 2011 stated that India is currently having maximum number of younger population than any other country in world.^[6] The frequency of diseases among children, female patients, and male patients are discussed below accordingly.

Children

Among 500 patients treated, 115 patients were children with age less than 12 years of age. Upper respiratory infections (URI) associated with febrile influenza like illness (FILI), water-borne infections like acute gastroenteritis, and dermatological infections like scabies and tinea were the top three diseases diagnosed among patients aged less than 12 years as mentioned with percentage (%) in Table 1.

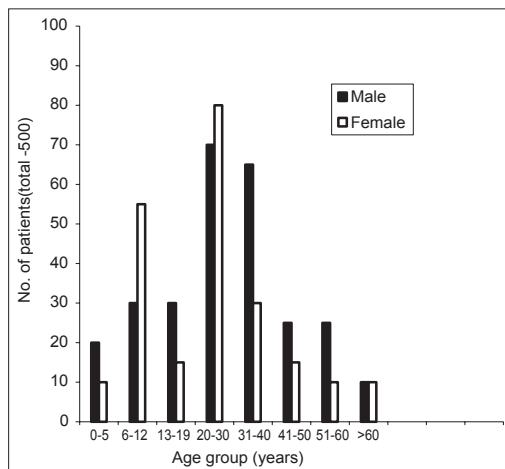


Figure 1: Age distribution of patients in the study

Adult females

Among 500 patients treated, 170 were adult females. Anemia, chronic back pain associated with depressive illness, and URIs were three most common diseases treated among adult female who came for consultation in the clinic. Frequent diseases treated among adult females has been depicted with % in the Table 2.

Adult males

Out of 500 patients, 215 patients were adult males who came to clinic for consultation. URI (associated with FILI), dyspepsia (peptic ulcer diseases), and pulmonary TB were the most common diagnosis among adult males treated at the clinic. Other diseases treated among adult males are shown in Table 3.

After compiling morbidity profile of total 500 patients who were treated during 100 consecutive working days, URIs (with

Table 1: Frequently treated diseases among children (age <12 years)

Diseases	Number of patients (total 115)	% among children patients
Upper respiratory infection (with influenza like febrile illness)	30	26.09
Acute gastroenteritis (diarrhea)	16	13.9
Scabies	08	6.95
Tinea infections	13	11.3
Malaria	10	8.7
Kala-azar (visceral leishmaniasis)	05	4.34
Typhoid	07	6.09
Pyoderma	09	7.83
Malnutrition	05	4.34
Pneumonia	06	5.22
Injury	06	5.22
Total number of patients	115	100

Table 2: Frequently treated diseases among adult females

Diseases	Number of patients (total 170)	% among female patients
Anemia (mostly associated with other problems)	52	30.6
Low Back pain with depressive illness	30	17.7
Upper respiratory infection	20	11.8
Acute gastroenteritis (diarrhea)	05	2.9
Dyspepsia including suspected PUS	10	5.9
Tuberculosis	05	2.9
Kala-azar	06	3.53
Malaria	04	2.35
Typhoid	07	4.12
Urinary tract infection	04	2.35
Vaginal discharge	12	7.06
Hypertension	05	2.9
Bronchial asthma	02	1.18
Oral ulcer (aphthous ulcer)	08	4.7
Total number of patients	170	100

FILI), anemia, and water-borne diseases including typhoid were three most prevalent diseases in this locality. Complete profile of diseases treated at the center has been depicted into exact number and percentage in Table 4.

Discussion

As locality of the clinic is situated in a hilly area mainly dominated by tribal population; vector-borne diseases like malaria, filaria, kala-azar, etc., are endemics depicted in the study. However, successful implementation of malaria control program and National Rural Health Mission (NRHM), the incidence of fatal cerebral malaria which was thought to be a major killer in recent past just a decade ago has come down significantly. From the morbidity profile of the patients; URI with associated FILI, acute gastroenteritis (diarrhea), and dermatological infections (like scabies, tinea, etc.) in children; anemia, nonspecific back pain with depressive illness, and URI in women; and URI (associated with FILI), dyspepsia (peptic ulcer disease), and typhoid in men were found to be the most prevalent diseases among patients who came for consultation. Among all 500 patients, three most common diagnosis irrespective of age were URI (with FILI), anemia, and water-borne diseases including typhoid in the study as shown in Figure 2.

Table 3: Frequently treated diseases among adult males

Diseases	Number of patients (total 215)	% among male patients
Upper respiratory infection (associated with febrile influenza like illness (FILI))	40	18.6
Dyspepsia (with peptic ulcer syndrome)	24	11.16
Typhoid	21	9.77
Pulmonary tuberculosis	18	8.37
Hypertension	11	5.12
Acute gastroenteritis (diarrhea)	23	10.7
Malaria	09	4.18
Kala-azar (visceral leishmaniasis)	18	8.37
Gout	07	3.25
Urinary tract infection	09	4.18
Diabetic mellitus	06	2.79
Injury	13	6.05
Others	16	7.44
Total number of patients	215	100

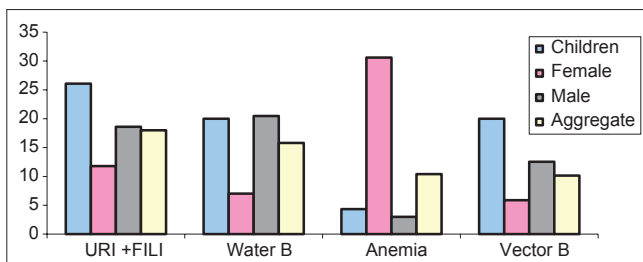


Figure 2: Comparative percentage of diseases in three groups and aggregate patients

Data collected clearly indicates that communicable diseases accounts for most of the cases in the local community. Table 5 illustrates some common communicable diseases found in this locality with possible interventions to control them.

Communicable diseases have been defined as an illness that arises from transmission of an infectious agent or its toxic product from an infected person, animal, or reservoir to a susceptible host, either directly or indirectly through an intermediate plant or animal host, vector, or environment. There exists equilibrium between susceptible population, infectious agent, and environment for constant presence of disease in particular locality as discussed here and illustrated in Figure 3.^[7]

Susceptible population

Certain individuals are more vulnerable to infectious diseases or

Table 4: Frequently treated diseases among all patients (500)

Diseases	Number of total patients	% of total (500) patients
Upper respiratory infections (associated with febrile influenza like illness)	90	18.0
Anemia (mostly associated with other problems)	52	10.4
Typhoid	35	7
Acute gastroenteritis (diarrhea)	44	8.8
Dermatological infection (like scabies, tinea, etc.)	38	7.6
Dyspepsia with peptic ulcer disorders	34	6.8
Back pain associated with depressive illness	30	6
Malaria	23	4.6
Tuberculosis	23	4.6
Kala-azar	29	5.8
Urinary tract infection	13	2.6
Hypertension	16	3.2
Diabetic mellitus	06	1.2
Injury	19	3.8
Others	58	11.6
Total number of patients	500	100

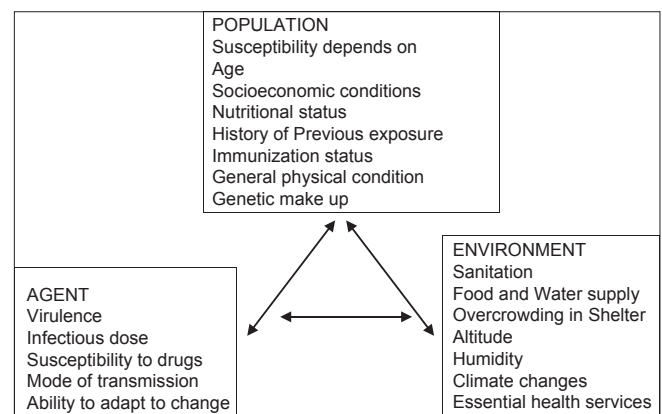


Figure 3: Equilibrium between population, agent, and environment

the more severe form of the illness. Immunity-deprived persons like those with poor nutritional status or infected with diseases like TB, measles, etc., are common in this locality. Children and elderly are at the greatest risk of morbidity and mortality from infectious diseases particularly the malnourished. Initial assessment and ongoing surveillance is critical to identify the most at risk groups so that they can be protected.^[7] Health indicators are still very poor in this area mainly due to illiteracy and poverty. Government protects original Pahariya community of tribal population and government is implementing many tribal welfare schemes for improving their living conditions. Native tribal population mainly depends on government primary health center and a nearby government funded mission hospital as a free healthcare facility which caters its services to nontribal population also with nominal charges. Historically, due to lack of constant source of income along with social evils of alcoholism has marginalized them from mainstream developing population. But gradually with facility of free residential schools for tribal children, mid-day meal scheme and other tribal development programs, there is new sense of awareness towards health is seen among them in recent years.

Infectious agent

Infectious disease agents are constantly developing where it is possible to multiply most easily either in susceptible persons, vectors, animals, or in the environment. Some infectious agents cause higher rates of illness and death because they have become resistant to available treatment (e. g., TB, malaria, typhoid, etc.).^[7]

Environment

Opportunities for infection might increase because of overcrowding, unhygienic conditions, lack of safe drinking water, climate changes, and inadequate income. Public health or medical services are also inadequate in hilly areas producing situation where targeting these tribal population in such mixed setting becomes challenging. Because of these extreme adverse environmental situations, these tribal population eventually become susceptible for spread of communicable diseases.

Communicable diseases do not always develop in the same way in susceptible hosts. Some diseases produce more nonclinical cases that experience vague, nonspecific symptoms; while other diseases produce more evident clinical symptoms. However, once exposed, people with clinical signs of infections as well as those people without any signs of infection (carriers) are capable of spreading the disease to other susceptible persons. There is equilibrium between susceptible population, infective agent, and environment as shown in Figure 3.^[7] Understanding the unique progression of a specific communicable diseases through the cycle helps to identify those individuals who are likely to transmit the disease as well as those at greatest risk of becoming ill or dying within the population. The cycle of communicable disease progression in susceptible hosts has been depicted in Figure 4.

Apart from detailed literature observed for transmission and possible control measures available for communicable diseases; specific measures might be undertaken for dealing with URIs

mostly associated with FILI, which was the most common ailment among patients.

Control of URIs

The control of URIs is based on early detection and standard case management. Volunteers and community health workers (CHWs) in the community can play a major role in controlling the disease. This also requires staff training, adequate drug supplies, and acute respiratory infection (ARI) management charts for primary health clinic (PHC) workers if it progresses to involve the lower respiratory tract (LRT). Access to healthcare (first-level health facilities and first referral hospitals) should also be assured. In addition to case management, URIs control also involves health education and personal hygiene. This will ensure that caregivers give appropriate home care, recognize danger signs, and know when to seek help. Approach should aim at preventing low birth weight (LBW) babies by ensuring at least four antenatal visits of expectant mothers with healthy food and tetanus prophylaxis so that there are lower incidences of these FILI. Promoting breast-feeding within 1 h of birth, complete immunization of babies (for six vaccine preventable diseases), vitamin A supplementation, and reducing domestic pollution will lead to fewer episodes of URIs in population. Personal

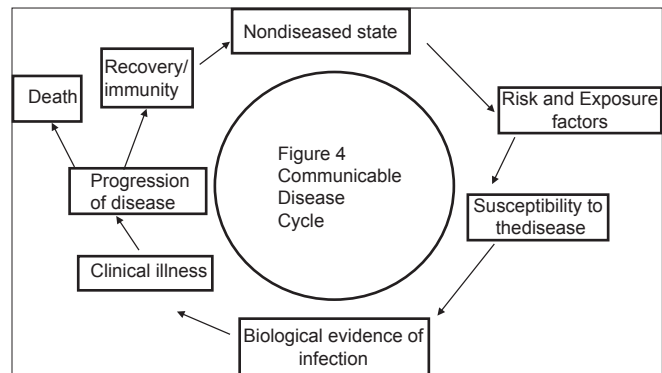


Figure 4: Communicable disease

Table 5: Some common communicable diseases in the locality

Mode of transmission	Diseases possible	Preventive measures and t/t
Air-borne diseases	Acute respiratory infections (including febrile influenza like illness) and tuberculosis	Adequate nutrition, case management
Water-related diseases	Diarrhea, dysentery, typhoid, parasitic infestation like hook worms, round worms, etc.	Safe drinking water, good sanitation, personal hygiene, case management
Vector-borne diseases	Malaria, leishmaniasis (kala-azar)	Vector control, self-protection and hygiene, case management
Contact or fomite-borne infection due to poor socioeconomic conditions including sexually transmitted-infections	Scabies, tinea infections, gonorrhea, syphilis, chlamydia, chancroid, and worm infestations	Hygiene, personal protection, health education, case management

protection during climatic changes is important as well good nutritious diet is always important to build immunity. Unnecessary use of antibiotics for FILLI should always be discouraged.^[8]

Control of anemia

The nutrition problem in these communities is primarily due to lack of nutritious food. Girls because of their lower social status often were the last in a family to eat, and therefore, more likely to eat too little food or food of low nutritional quality. As such, the intervention focused on providing nutrition education and changing social norms. Community-based health workers should visit homes monthly and assess girls' dietary patterns, convey to them nutritional messages, and share information on seasonally available, low-cost iron- and vitamin C-rich foods.

In this regard, Government of India has focused on anemia prevention and control program not just for adults, but also adolescents. Adolescent Reproductive and Sexual Health programme (ARSH) has been started in which apart from treatment and advice for adolescent related sexual problems, iron supplementation along with albendazole is given free of cost. Participatory nutrition education is encouraged widely among adolescent girls to improve their diets and iron status. Nutrition education is included in iron supplementation programs to help maintain improved iron status among pregnant females. Key dietary behavior messages for girls is given like eat three or more meals a day; eat along with the family so that girls eat enough; eat green vegetables daily; and eat lemon, gooseberry, or other vitamin C-rich foods with meals. These simple measures can have major impact on prevalent anemia in this locality.

Control of typhoid

The following measures may be undertaken to control outbreaks of typhoid:

- Chlorinating the water supply is the best assurance against a massive typhoid outbreak in the community
- Promoting food hygiene should focus on hand washing among food handlers and checking that anyone who has ever been sick does not prepare food for others. However, identifying food vendors with typhoid fever and restricting them from work until they are not contagious may not be feasible in emergency situations
- Vaccine against typhoid (Vivotif oral) is available but not recommended as it offers only low, short-term individual protection and no protection against the spread of the disease
- Importance of due personal protection is always emphasized.

Drugs prescribed for treating abovementioned diseases would be discussed as number of drugs per prescriptions, type of drugs prescribed, route of administration of drugs (e. g., oral, intramuscular, or intravenous), common drugs prescribed, and how commonly these drugs were prescribed in terms of percentage among prescriptions in Figure 5.

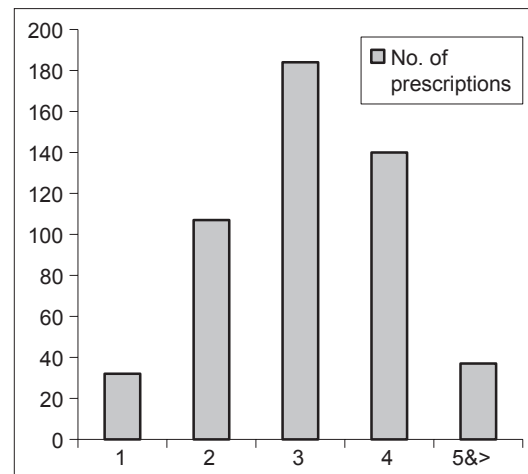


Figure 5: Number of drugs per prescription

Most of patients were treated in OP setting, so most of them were advised medicine by oral route apart from some patients who were administered medicine by intramuscular route mostly in emergencies like injury causing severe pain or for tetanus prophylaxis. Severely dehydrated patients were advised intravenous (IV) fluids and administered at nearby primary health center due to nonavailability of inpatient facility at clinic.

Treatment given to these patients comprised of mostly of antipyretic, analgesic, antimicrobial, proton pump inhibitors, antihypertensives, antidiabetic, antidepressants, antiasthmatic, and iron and vitamin supplementing agents. Most common drug prescribed was paracetamol for fever. Other common drugs prescribed were amoxicillin clavulanic acid, chloroquine, artemisin derivative, doxycycline, co-trimoxazole, miltefosine, cephalexin, ceftriaxone sodium, cefixime, oral rehydration salts, ranitidine, omeprazole, pantoprazole, metronidazole, albendazole, ondansetron, diclofenac sodium, piroxicam, ibuprofen, diphenhydramine, codeine-sulfate, amlodipine, ramipril, hydrochlorothiazide, atenolol, salbutamol, etophylline, metformin, glimepiride, fluoxetine, flavoxate, tamsulosin, etc. Common drugs prescribed as number of times prescribed per 100 prescriptions (as percentage (%)) has been shown in Figure 6.

Most of patients have been followed-up for at least 1 week time. More emphasis has been given to reach a probable diagnosis by clinical examination itself and judicious use of available investigations has been done to reach a probable diagnosis keeping in view cost of treatment. As most of patients coming for consultation belongs to lower and lower middle class; therefore, due consideration has been given to cost of drug and while prescribing, most of the time cheaper drugs have been selected as compared to newly acclaimed better drug which is costly.

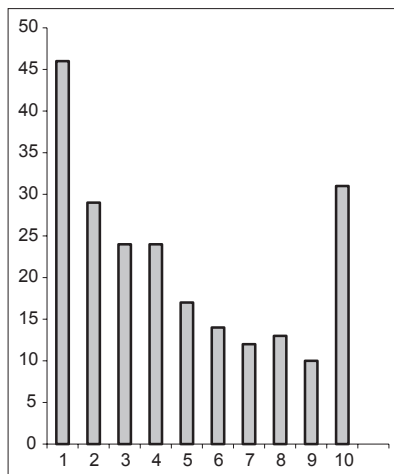


Figure6: Commonly prescribed drugs as % of prescriptions. 1 = Paracetamol/acetaminophen, 2 = amoxicillin, 3 = digestive enzymes/carminative mixture, 4 = ranitidine, 5 = chlorpheniramine maleate, 6 = phenylpropralamine HCl, 7 = metronidazole, 8 = diclofenac sodium, 9 = iron-folic acid, 10 = multivitamin supplement (vitamin B-complex)

Summary and Conclusion

Growing general awareness of the latest advances in which healthcare may be delivered is contributing to a gradual rise in standards of quality and safety in healthcare. But such efforts have concentrated disproportionately on hospital and specialist care, mainly in high- and middle-income countries. The effectiveness and safety of generalist care, where most interactions between people and health services take place, has been given much less attention. This is a particularly important issue in the unregulated commercial settings of many developing countries like India where people of average lower middleclass is regularly being pushed to BPL category due to these unexpected financial burden. In spite of latest advances and multispeciality private hospital in big cities in India, majority of population has no access to these facilities due to financial restraint. Most of patients still suffer due to transmission of air-borne diseases like URIs (with influenza like illness) and TB, or water-borne diseases like acute gastroenteritis and typhoid, or vector-borne diseases like malaria and kala-azar, or fomite-borne infectious diseases like scabies and tinea. These diseases mostly spread due to poor nutritional status (like anemia), overcrowding, unhygienic living conditions, lack of safe drinking water, climatic changes, etc. Public health or medical services are also inadequate producing situation where providing optimal healthcare becomes challenging. Many patients are referred to specialists due to lack of training and confidence of general physicians in dealing with diseases.

If general practitioners could be made multicompetent and empowered to refer less, certainly the healthcare cost can be reduced substantially. More than 90% of the illness affecting

majority of Indian population can be effectively managed by properly trained family physicians. But due efforts from respective state governments is always necessary in terms of policies for improving the healthcare facility and socioeconomic condition of society at large. This will certainly bring rationality in management of illness and also decrease unnecessary referral of patients to specialists.

Common and comparatively cheaper drugs can effectively treat majority of diseases in the community and unnecessary use of costlier drugs should be discouraged.^[9] Government should come forward with policies discouraging direct consultation to specialist for any ailment without due referral from a family physician so that scarce specialist services could be utilized in better way.

At last, as a medical professional we owe it to the people of India to provide evidence-based quality healthcare without subjecting them to unnecessary investigation and interventions, thereby providing effective and cheaper healthcare to the population at large.

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