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HOUSEHOLD SURVEY ON RATIONAL USE OF MEDICINES IN INDIA

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ABSTRACT

Irrational use of medicines is a global problem and in developing countries this problem is enormous and not well documented. Few household surveys on medicine use were conducted in India and were rarely published or not fully documented. The aim of the present household survey was to evaluate the use and storage of medicines in the Chittoor district of Andhra Pradesh, India and identifying related problems. A cross-sectional study was conducted using a set of household interview questionnaire. The study included 500 households in Chittoor district of Andhra Pradesh, India. Results showed almost 3/4th households (74.67%) had medicines at homes and 28.57% of medicines found at household are not used at all. 32% of households are self-medicated. 90.66% of respondents check the expiry date of medicine before its use. 8% of house hold keeps the leftover medicines for future use. About 27.27% stored medicines in Cupboard and 16.67% in Drawer, 3% in cover and 1.52% stored in a refrigerator. About 6% of the stored medicines are bad condition. 1.56% of medicines at homes were already expired. 73% of medicines were with adequate labels. 88.63% respondents had correct knowledge of dosage of the medicines at homes. It is obvious that there is inappropriate use of medicines among the sampled population and hence there is a conclusive need for promoting rational use of medicines in the community to enable people to store and use medicines in a proper way.

Key Words:- Household, Storage, Irrational, Community, Self-medication, Rational Use, Medicines.

INTRODUCTION
Rational use of medicines

Rational use of medicine is defined as patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements, for an adequate period of time, and at the lowest cost to them and their community. This definition is outlined by the World Health Organization (WHO) in1985 at the Conference of

Experts on Rational use of medicines, Nairobi. Simply to say rational use of medicine is one if right medicines in a right dose for right duration are given to the right patient at the affordable cost.

Irrational use of medicines is a global problem and occurs in developing, transitional and developed countries. In developing countries this problem is enormous and not well documented. It frequently steer to problems which includes ineffective treatment, resistance to various medicines, patient noncompliance, and on the whole decreases in quality pharmaceutical care and also increases morbidity and mortality, too much spending on

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medicines and wastage of resources, by both health care professionals and patients.

Worldwide the medicines are prescribed, dispensed and or sold irrationally which accounts more than 50% of all the medicines and 50% of patients fail to adhere to the prescribers' advice and not take them correctly. On the contrary, about one-third of the world's population lacks access to essential medicines (WHO, 2011). One among the known cost effective medical intervention is treating with medicines, and in developed countries the national health budgets spent on medicines ranges between 10% and 20% and between 20% and 40% in developing countries. Thus, it is exceptionally serious that most of the medicines are being used in an inappropriately and irrationally.

There are many factors interlinked with each other, which can influence the use of medicine. The healthcare system, the physicians, pharmacists and the community are involved in the therapeutic process and can be the reason for the irrational use of medicine in many ways. Previous research findings advocate that wastages of medications may be due to irrational prescribing and dispensing pattern, or due to lack of stringent rules over sales of prescription only medicines in the retail pharmacies and poor or noncompliance of the patients (Potter M, 1981; RPSGB, 2002; Nasser AN, 1991; Freihi H *et al*., 1987)

The storage of medicines and its expiry status, quality and types of medicines in home were studied in previous surveys conducted in other countries. The reports of those studies revealed that there are therapeutic replications, wastage of medicines and unnecessary holding of medicines and it also revealed that about 50% of medicines found in the households were not in current use and about 40% of those medicines were expired (Skinner RF *et al*., 1987; Abou-Auda HS, 2003)

In today's situation in India like countries, where there is a wide difference in the availability of medicines amongst villages and cities, rational use of medicines is imperative. The rational medicine use concept has not yet penetrated the minds of healthcare team and the public, and as a result in both the medicines available as well as the medicines prescribed there is unbridled irrationality.

Pattern of the irrational medicine use

Unfortunately Prescribing patterns always do not go with set criteria, and that's why it can be classified as irrational or inappropriate. Regular patterns of irrational prescribing, can, therefore be discernible in the following ways.

a. Prescribing rational medicine, still
- It will be used while it is not required

- Medicines are prescribed not as per the Standard Treatment Guidelines
- Failure to use available, effective safe medicines
- The use of right medicines with inaccurate drug administration including improper dosage and duration

b. Irrational use of Medicines
- Use of futile medicines and with uncertain efficacy
- Use of risky Medicines

Terrible impact of irrational use of medicines

The use of inappropriate medicines on an extensive degree can have considerable serious effects on health care and its costs as well as the quality of drug therapy. Other negative effects are augmented chance of adverse reactions, and a patient's inappropriate reliance on medicines.

Reasons for irrational use of drugs
- Lack of unbiased information on the recent drugs
- Inadequate and inappropriate training & curriculum of medical graduates regarding the prescription writing
- Poor communication among healthcare professional & patient
- Lack of diagnostic facilities & doubtful diagnosis
- Demand from the patient for quick relief and their false belief that "every ill has a pill" which increases the polypharmacy trends
- Defective supply system & ineffective regulation on drugs
- Lucrative promotional activities of pharmaceutical industries that influencing the prescription of a drug

Importance of study

In most of the developing and transitional countries there is a dearth of studies to examine and enumerate the enormity of the problems of inappropriate use of medicines in the population and also several conducted studies were occasionally published or not completely documented.

GENERAL OBJECTIVE

The main objective and aim of the present household survey was to evaluate the use and storage of medicines in the Chittoor district of Andhra Pradesh state of India and identifying related problems.

SPECIFIC OBJECTIVES
- To determine certain characteristics of surveyed households
- To know the prevalence and types of chronic conditions in the surveyed households

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• To determine the prevalence and type of traditional remedies used by households
• To identify medicines available in surveyed households, their therapeutic uses, by whom and for what they were/are used
• To know the channels through which the people treated and obtained their medicines and reasons for choosing these sources
• To identify store places and conditions of stocked medicines and knowledge and practices towards left-over medicines and expiry dates of medicines at homes
• To evaluate the adequacy of labeling and households' knowledge of correct dosage of medicines found in households
• To enumerate the relationship between the all above objectives with that of rational use of medicines and to eliminate irrational use of medicines.

METHODOLOGY

The data collection method was a structured interview of household. The study design was a baseline cross sectional study based on the methods enclosed in WHO manual - How to investigate the use of medicines by consumers. The written interview questionnaire in a pre-defined order for the interview is the tool used for this study. The direct structured observation along with interview in order to have more pertinent information on actual activities than interview alone. For example in order to know what are the medicines they have at home, instead of asking "what medicines they have at homes" the interviewers asked the respondents to show the medicines they have at home. In this case the data collector can see what medicines are available in the households, how they stored, their expiry dates, medicines left from past treatment, adequacy of labeling and households' knowledge of correct dosage. The questionnaire prepared was short and simple with technically correct terminology. It was prepared in local language and translated into english to be ready for use when needed. A pilot test was conducted in the field. The aim of the pre-test was mainly to test the questions and things to be observed and to identify the limits. According to the results of the pilot test the draft protocol was revised and the weaknesses were addressed before the actual survey was conducted. The data collected in the pilot test did not form a part of the survey sample. Details of the interview questionnaire are illustrated as Proforma-1: House hold survey form.

Basically the interview questionnaire consists of the following parts:
• The socio-demographic data of surveyed households (including education of the parents and the presence of member/s in the family or relative/s working in the health sector and his/her job.
• The common chronic diseases in the interviewed households (their prevalence and types).
• The use of traditional remedy in the interviewed households (their prevalence and types).
• The available medicines in the households where the survey is conducted and their therapeutic uses and by whom they are/were used.
• The various channels through which people in the communities treated and obtained their medicines and the reasons for choosing them.
• The different storage places of the stocked medicines at homes
• The expiry dates of the stocked medicines, and the left-over medicines (left from past treatment) and how households deal with them
• The adequacy of labels for the stocked medicines
• The households' knowledge of the correct dosage regimen and route of administration of stocked medicines

One member from each family home was interviewed, generally the parents or other member of the family aged around 20 to 60 years old. Data collectors informed that the survey should be finished if the 'house informant' or appropriate substitute is absent. Therefore, some data collection was done in the second or third visit when the family to be visited or the person to be interviewed was not present at home during the earlier visit. Also when a household was notable to participate in the survey; the next household was chosen as a replacement. A total of 500 households were involved in the survey.

The data collectors were directed to visit maximum of 5 houses per day and also instructed not to visit many houses in the same day to collect assured quality data. The answers of the interview and the observations were recorded instantly into the questionnaire forms by interviewers trained for this purpose. Respondents were assured of confidentiality and informed that only cumulative data would be reported. Area supervisors checked all completed questionnaires at the end of each day of data collection.

STUDY PERIOD

The study was carried out over a period of approximately six months.

DATA PROCESSING AND ANALYSIS

The collected data was entered into a computerized database using Graph Pad Prism. The data was analysed by frequency and reported as percentage.

ETHICAL CONSIDERATION

All the concerned authorities were informed before the implementation of the survey. Respondents were free to accept or refuse to participate at any time. They assured of anonymity and that any information provided will be kept confidential and also informed that only aggregate data will be reported.

RESULTS

Results showed that more than half (58%) of the parents in surveyed households had at least basic education. Almost one fourth (28%) of the households have one or more family members or relative working in the health sector. There were 34.67% of households with members suffering from one or more chronic disease, mainly diabetes mellitus (30.76%) followed by hypertension (26.92%). 17.33% of households with persons using traditional medicines but not always. Almost 3/4th households (74.67%) had medicines at homes.37.50% of household having more than 4 medicines at home and 26.79% having 3 medicines at home , 17.86% having 2 medicines and remaining 17.86% having only one medicines at home. The medicines most frequently located in the homes were used by adult (64.29%), Adolescents 21.43% , Children 19.64% and Geriatrics 12.50%. about 28.57% of medicines found at household are not used at all and 71.43% of medicines are used.25% of household using 2 medicines for same illness and 14.29% using 3 medicines for same illness. About 10.71% of households use paracetamol for more than one illness. 96% of households sought healthcare from Physician only. 32% of households are self-medicated and they sought healthcare from family members 66.67% and themselves 25% and through mass media 8.33% and from friends and neighbour 4.1%. 90.66% of respondents mentioned that they check the expiry date of medicine before its use; among them 9% check the expiry date sometimes only and 81.66% check the expiry always. 88% of households told they throw the unused medicines and among them 93.93% households throw only expired medicines and 6.06% throw both expired and non expired medicines. 8% of house hold keeps the leftover medicines for future use. About 50% household stored the medicines in medicine box and 27.27% stored in Cupboard and 16.67% in Drawer, 3% in cover and 1.52% stored in a refrigerator. About 90.91% of the stored medicines are in good condition and 6 % of them are in bad condition. 1.56% of medicines at homes were already expired. 73% of medicines were with adequate labels. Respondents had correct knowledge of dosage of 88.63% of the medicines at homes. Other results are given in Table No.1 to Table No.9

Table 1. Socio-demographic characters of interviewed households

Characteristic	Parameter	Percentage
Educational level of the Parents	Illiterate	42
	Literate	58
Family working in a health sector	Yes	28
	No	72

Table 2. Prevalence of most frequent chronic diseases reported in interviewed households

Chronic Disease	Percentage
Hypertension	26.92
Diabetes Mellitus	30.76
Cardiac Diseases	10.04
Bronchial Asthma	1.24
Other	31.03
Household with one or more Chronic disease(s)	34.67

Table 3. Treatment Options with traditional medicines in surveyed households

Households	Answer	Percentage
Using traditional medicines	Yes	17.33
	No	82.67
Frequency of using traditional medicines	Always	73
	Sometimes	27

Table 4. Medicines and their uses in surveyed households

In Households	Answer	Percentage
No. of medicines found and their percentage	1 or 2	17.86
	3	26.79
	> 3	37.5
Percentage of medicines found which used by different age groups	Children	19.64
	Adolescents	21.43
	Adult	64.29
	Geriatrics	12.5
Households		**Percentage**
Had medicines at homes		74.67
medicines which is not used at all		28.57
Using 2 medicines for same illness		25
Using 3 medicines for same illness		14.29
Using same medicines for different illness		10.71

Table 5. Peoples from whom households sought healthcare

Healthcare Provider	Percentage
Physician/Doctor	96
Pharmacist	1.33
Nurse	1.33
Traditional Healer	0
If Self medicated	**Percentage**
Himself/Herself	25
Family member	66.67
Neighbours/Friends	4.17
Mass media	8.33

Table 6. Information on expiry dates of medications found in the surveyed households

Respondents	Percentage
Mentioned they check expiry date	90.66
Mentioned they do not check expiry date	9.34
Mentioned they always check expiry date	81.66
Mentioned they sometimes check expiry date	9
Having medicines with expiry date	98.44
Having already expired medicines	1.56

Table 7. The left-over medicines in the surveyed households and their disposal

Respondents	Percentage
Keep left-over medicines from previous treatment	8
Return left-over medicines to a pharmacy	0
Throw out the left-over medicines	88
Dispose only expired medicines	94
Dispose both expired and non-expired medicines	6

Table 8. The common places where medicines stored at home

Storage area	Percentage
Medicines' Box	50
Refrigerator	1.52
Cupboard	27.27
Drawer	16.67
Other	4.55

Table 9. Labelling of medicines found at home during the survey

Details in Label	Percentage	
	Yes	No
Patient Name	17	83
Medicine Name	98.4	1.6
Dose	94	6
Frequency	79	21
Duration	79	21

Fig 1 a & b. Proforma for Household assessment form

Interview form

Respondent No.: ------------------ Village: ---

Community: Urban /Rural   Date of interview: ------------------------------------

Interviewers: Name: ------------------------------ Profession: ----------------------------

First: Socio-demographic information

1. Educational level of the Parents: Illiterate / Literate

2. Is there any member in the family working in a health sector? Yes / No

    If yes, specify his/her: Relation ---------------------- Job ------------------------------

Second: Family Health condition and Treatment of health problems

1. Is there anyone in the house suffering from chronic disease?   Yes / No

    If Yes: Hypertension/Diabetes mellitus/Cardiac Disease/Bronchial Asthma /Other

    If other, Specify _____

2. Is there anyone in the house using traditional medicines? :   Yes / No

    If Yes: Specify_____

3. How frequently traditional medicines used by the family?   Usually / Sometimes

4. No. of medicines found in a home_____

5. No. of medicines used by

Children [< 12 years] _____   Adolescents [12 – 20 years] _____

Adult [> 20 - 60 years] _____   Geriatrics [> 60 years]   _____

6. No. of medicines at home not used at all _____

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7. No. of medicines used for same illness _____ (What is the illness_____)

8. No. of same medicines used for different illness _____ (What is the medicine_____)

9. People's from whom they sought health care_____

a. Physician/Doctor   Pharmacist   Nurse   Traditional Healer

b. Self medicated: Himself/Herself   Family member   Neighbour/Friends   Mass media

Reason for choosing them _____

<u>Third: Information on expiration date and left-over medicines in the home</u>

1. Do you check the expiry date before you use the medicine? Yes / No

       If yes: Always / Sometimes

2. How do you deal with left-over (unused medicines)? :

       Keep them / Return them to a pharmacy / Throw them

3. Which medicines do you dispose?

       Expired medicines only / Both expired and non-expired medicines

<u>Fourth: Information on medicines available in the home (currently used or left-over)</u>

1. Do you have medicine/s in your home? Yes /No

If the answer is yes , request them to show you the medicine/s + traditional medicines in the home

and fill the below details

    1. Name of the medicine: 2. What is the current use of medicine

    3. Used by: Male/Female/Both   Age:

    4. Storage place :Medicines' box / Refrigerator / Cupboard/ Drawer / Other (specify)

    5. Storage condition: Good / Bad (specify)   6. Expiry date : Present / Expired

    7. Package   :Original /Other   Type:

    8. Adequacy of Label:

| Patient Name : | Yes / No | Medicine Name: | Yes / No | Dose : Yes / No |
| Frequency   : | Yes / No | Duration   : | Yes / No | |

    9. Patient knowledge of Correct dosage:

| Route   : | Yes / No | Dose   : | Yes / No |
| Frequency   : | Yes / No | Duration   : | Yes / No |

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DISCUSSION

Household surveys are relatively difficult to conduct. This is because high cost, time consumed, long distance to reach households, also some families of the data collectors do not accept that their daughters or sisters visit households and it was difficult for male data collectors to enter a house in the absence of a male in the house. However, studies carried out in the community are very important as they enable researchers to understand medicine use practices and its related aspects from both the patient's as well as and consumer's position and may encourage the development of adequate medicines policies (Gest S Van Der & Hardon A,1988). The current study attempted to quantify the type, quality, storage and use of medicines in the community and identifying related problems. A particular strength of the research design was the prospective nature of the study, where an inventory of medicines at homes was made for each household participating in the study.

The interpretation of the study results was general in relation to different environment and characters of the studied households. The overall results of the studied households regardless the geographical location of the surveyed households, nationality of the respondents (almost all were Indian), educational level of the parents, and households with one or more family member or relative working in the health sector were calculated. This survey collected information about household morbidity particularly the chronic cases. The chronic disease was defined as an illness that will not go away or take a long time to go away, even when treated. The respondents were asked to provide if there is household member with chronic disease and its type. The chronic diseases documented as they were recalled by respondents.34.67% of the surveyed households reported at least one chronic condition. This result is similar to the results of a previous study conducted in the Arabian Gulf where the presence of chronic disease was noted in 44%, 31.9% and 49.4% of Saudi, non-Saudi, and other Gulf households' respectively (Abou-Auda HS, 2003).The most frequent reported chronic diseases were hypertension, diabetes mellitus, cardiac and respiratory diseases. The medicines survey collected information about both modern pharmaceuticals and traditional medicines. In 1/5th of the households there was one or more person in a household used traditional medicine. The most common type of traditional medicines used by households was honey, turmeric and ginger. Treatment with home remedies is common in other countries too. The reasons cited in studies for that were easy availability, accessibility, and affordability of herbal medicines as well as previous experience of treating a similar illness (Sclafer J *et al.*, 1997) Traditional health

care providers may have an important role to play, but this requires persons with a formal medical education and strict government regulations and enforcement. Medicines found in the households and their use is the main important part of this survey. The medicine survey gave information on which medicines people access and use, who prescribed them, where they obtained from, where they stored, their expiry date, the adequacy of labeling and patient knowledge of correct dosage. In each household the data collectors asked the respondents to see all medicines kept at home, and recorded the information directly into the questionnaire forms. Almost all households had medicines at homes and only very few had no medicines on hand. Some of those who mentioned that they had no medicines at homes may be afraid to show their medicines. The average number of medicines found per a household (4 medicines) is considered to be relatively high and a very large number of medicines (15 medicines) was found in one of the surveyed households. The medications most frequently located in homes were musculoskeletal/joints medicines. The views of family, closes friends, and the community will often influence the people who are ill to decide whether to go ahead for treatment or not. Once they decide that help is needed, people choose where to seek help. The sources of care from which patient received care at time of illness were health workers in a public or private health facility, traditional healers, or self-medicated by self, relative or other member of the community. Self-medication was prevalent among households participating in this study.

The reasons why people choose different providers for treatment and places to obtain their medicines were similar to those found in other studies. The common reasons for choosing sources through which households treated and obtained their medicines in this study were the symptoms are minor, have past experience and familiarity with the required treatment, advise from friends and relatives, and their beliefs about medicines and the type of illness. How medicines are stored is very important. Heat, moisture, light, and dirt can all harm medicines, making them unsuitable for use. Therefore, patients should ask the health care providers where and how to store their medicines at home and should follow the storage instructions. 1.52% of medicines found at homes were stored in a refrigerator. People should know that only few and specific medicines need to be stored in a refrigerator in order to maintain their quality and efficacy, whereas other medicines may be spoiled and lose their activity when stored in a refrigerator. In general medicines which are not stored properly may lose their action and become toxic even before their expiry date. Also it is

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important that medicines should be stored out of the reach of children to avoid any accidental poisoning.

Expiry date is the period extended from the date of manufacture to the date on which the medicine should not be used by the patient or consumer. The expiry date of a medicine is valid if the medicine stored at the proper conditions. Medicines which transferred from the original package or opened for use and particularly eye preparations and solutions formed by reconstitution of powders will have expiry date shorter than the stamped one. 5.33% of households did not check the expiration date of the product prior to drug administration. Also 1.56% medicines found in households were expired in addition to those which may be deteriorated but with valid expiry dates. Similar results were obtained in similar studies conducted in some other countries (Abou-Auda HS, 2003).Patients should not use any medicine after its expiry date or if changes in colour, taste or appearance occur. Left-over medicines i.e. medicines left from past treatment which were prescribed or purchased over-the-counter (OTC) are never fully consumed. They are either unused or used for previous illness or symptoms or even for different disease. Most of left-over medicines were obtained from public health facilities free of charge. A small percentage of prescription and OTC medicines dispensed from community pharmacies and paid for by consumers i.e. out-of-the-pocket. Therefore, government health facilities are partly to blame for the problem of medication wastages because of the polypharmacy where medicines or quantities prescribed and dispensed are not needed at all or more than needed (Al-SiyabiK & Al-Riyami K, 2007). Another reason for left-over medicines is that many patients still entertain the idea that the outcome of their visit to public health facilities must be the dispensing of a prescription. Also it may be due to visiting more than one health facility at the same time or due to patient non-compliance with prescribed medicines or the failure to take the prescribed dosage or complete the entire course of medication therapy prescribed or dispensed by a health care provider (Abdo-rabbo A *et al.*, 2009) This problem is common to many other societies as well (Yosselson S & Superstine E, 1977). 86.66% households keep stocks of left-over medicines in their homes. As there is no regulation regarding unused medicines, patients decide what to do with any medicine that remains unused. People may re-use left-over medicines or give them to relatives, friends, or neighbours who need them. Left-over medicines should not be taken on the basis of previous experience and physical response or according to advise from people other than health professionals and should not exchange medicines with others. Left-over medicines from previous treatment should neither be thrown out nor kept

for future use. Unused medicines accumulation in the households is not only a financial burden, but also represents a significant source of accidental medication poisoning, particularly for young children. Therefore, the right action is to return back the unused medicines to a public pharmacy in order to avoid any health risks and wastage. The need for appropriate methods for disposal of unwanted medication in the home is a problem. Guidelines on safe disposal of unwanted medicines are required and an organized method of collecting unused medication needs to be introduced (Abahussain EA *et al.*, 2006).

Labeling is very important to measure the degree to which dispensers record essential information on the medicine package they dispense and also important to use the medicine properly. The WHO recommends that each medicine label should contain dose regimen, drug name and patient's name. For each medicine found at home, the data collector recorded the condition of the label. Only small percentage of household medicines found with appropriate label. Names of the patients were not written in almost all the labels, and dose regimens were not written with all necessary details. Omission of patient's name on medicine labels is a serious matter, with potentially serious consequences such as drug misuse, drug abuse, and overdose. Medicine labeling can be improved with computerization and proper staff training. It is important to measure the information patient or care taker should know on the dosage schedule of medicines available at homes and particularly which they use. Households' knowledge for each medicine considered correct if they have adequate knowledge about route of administration and dosage schedule (dose, frequency, and duration) of medicines available at homes. In this survey households have adequate knowledge of correct dosage of the medicines available at homes. In order for treatment to be effective, it is essential that the user receive adequate information on his or her medicines. Patients should also ask the prescriber and dispenser about the instructions regarding the prescribed or dispensed medicines and understand them. If the patients do not understand the instructions, and cannot read the labels, then they cannot comply with the medicines that have been dispensed to them. Also it may turns effective and safe medicines into ineffective and dangerous. Patient-provider interaction is clearly critical to health care delivery and the proper use and understanding of medicines. Health care providers should improve their communication skills and give patients the information they need in language they can understand. Therefore households' knowledge about their medicines can be improved by good communication between health providers and patients or care takers and through public education on rational use of medicines.

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To promote for more rational use of medicines, different programs addressing rational use of medicines should be implemented with the involvement of academia, regulatory authorities and other involved organizations working together to address the existing problem of irrational use of medicines and agreed on the different strategy to be implemented. To ensure that medicines are used optimally to meet the patients' clinical needs, efforts should be spent by the regulatory agencies to ensure safe and effective use of medicines all over India. Our results highlights on the necessity of the involvement of the regulatory authorities to provide continuous medical education targeting community by organizing various seminars and workshops to discuss aspects of rational drug use. It is important to emphasize the limitation of this study which was done on a relatively small scale (n=500). This sample size may not be representative number for the whole population, so inferences to whole population cannot be made. Despite the study limitations and comparably less number of household were interviewed, it highlighted on the different concerns toward the need to more monitoring of medicines use.

CONCLUSION AND RECOMMENDATIONS

It is obvious that there is inappropriate use of medicines in the community. Therefore, there is a well-evidenced and compelling need for promoting rational use of medicines in the community to enable people to store and use medicines in an appropriate, safe and judicious way.

Based on the results of our study the following recommendations have been suggested to improve rational use of medicines in the community:

1. Increase sensitization of the public and health providers about the benefits of appropriate use of medicines.
2. Increase the awareness of health providers and public about potential dangers of inappropriate use of medicines.
3. Plan effective public education programs for promotion of rational use of medicine in the community providing with the necessary human and financial resources.
4. Relevant governmental and institutional regulations to promote rational use of medicine should be implemented and enforced.
5. More and more researches are needed focusing on the factors involved in the irrational use of medication to help in improving interventions and planning.

It is very important to consider that changing practices towards the use of medicines in the community can take a lot of time and efforts.

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