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### Knowledge of community pharmacist in the management of diarrhea in adults

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#### ABSTRACT

Public frequently approach the community pharmacists to answer health-related queries. To provide a quality service, community pharmacists should have updated knowledge on the management of diseases. The present study was aimed to evaluate the knowledge of community pharmacists in the management of diarrhea in adult. Hundred community pharmacists were interviewed using a well-designed peer reviewed 'Interview Questionnaire Form'. The study result showed that most community pharmacists were not enquiring about the food taken, recent travel, medication history, pregnancy, breast feeding, and associated symptoms before dispensing drug(s) which may leads to wrong diagnosis, drug-drug interaction, toxicity to the foetus, toxicity to the breast feeding babies and ignorance of major health issues. Most community pharmacists were not aware of the basic in treatment of diarrhea which is the replacement of lost electrolytes and fluids during diarrhea. Few community pharmacists were not recommending the patients to seek expert opinion in severe cases of diarrhea. Most community pharmacists were not counselling the patients regarding the complication of dehydration and its prevention using oral rehydration powder; how to reconstitute oral rehydration powder; importance of personal hygiene, basic sanitation and good drinking water and when to seek expert opinion. The study concludes that most community pharmacists in and around Bhavani and Komarapallayam were not adequately knowledged to provide a quality service in the management of diarrhea in adults. Pharmacy colleges and physicians should take the responsibility of educating the community pharmacists through regular refresher programmes on various health related issues.

**Key words:** Adult Diarrhea, Management of Diarrhea, Community Pharmacist Knowledge

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## INTRODUCTION

Diarrhea related mortality in children < 5 years of age and in adults was estimated to about 1.5 million per year worldwide [1-6]. Diarrhea in adult may be acute or chronic depending on frequency and duration. Three or more loose stools in a day for < 3 weeks is considered to be acute. Some of the common pathogens and drugs that cause acute diarrhea in adult are listed in table 1 [7-8]. Diarrhea with three or more loose stools per day for more than 3 weeks and/or a daily stool weight greater than 200 g/day is considered to be chronic. Some of the common causes of chronic diarrhea in adult are Colonic Neoplasia, Ulcerative and Crohn's Colitis, Microscopic Colitis, Coeliac Disease, Whipple's Disease, Tropical Sprue, Amyloid, Intestinal Lymphangiectasia, Bile Acid Malabsorption, Disaccharidase Deficiency, Small Bowel Bacterial Overgrowth, Mesenteric Ischaemia, Radiation Enteritis, Lymphoma, Giardiasis, Pancreatic, Chronic Pancreatitis, Pancreatic Carcinoma, Cystic Fibrosis, Endocrine, Hyperthyroidism, Diabetes, Hypoparathyroidism, Addison's Disease, Internal Fistulae, Drugs, Alcohol, Autonomic Neuropathy[9]. Lack of hygiene, basic sanitation and safe water accounts for about 88% of the diarrhea. Studies have shown that safe water, basic sanitation and hygiene reduces the chance of diarrhea to about 30-50% [10]. During diarrhea, loss of water and electrolytes through stool and vomit leads to dehydration and finally death if losses are not replenished adequately [11].

**Table 1: Causes of Acute Diarrhea**

<b>Bacteria</b>	<i>Vibrio cholerae 01, Vibrio cholerae 0139, Vibrio parahaemolyticus, Escherichia coli, Plesiomonas, Aeromonas, Bacteroides fragilis, Campylobacter jejuni, Campylobacter coli, Campylobacter upsaliensis, Nontyphoidal Salmonella, Clostridium difficile, Yersinia enterocolitica, Yersinia pseudotuberculosis, Shigella species.</i>
<b>Virus</b>	<i>Rotavirus, Norovirus, Adenovirus, Astrovirus, Cytomegalovirus, Coronavirus.</i>
<b>Parasite-Protozoan</b>	<i>Enterocytozoon bienersi, enterocytozoon intestinales, Giardia intestinalis, Cryptosporidium hominis, Entamoeba histolytica, Isospora belli, Cyclospora cayetanensis, Dientamoeba fragilis, Blastocystis hominis.</i>
<b>Parasite-Helminths</b>	<i>Strongyloides stercoralis, Angiostrongylus costaricensis, Schistosoma mansoni, Schistosoma japonicum, Capillaria Philippinensis.</i>
<b>Drugs</b>	Drugs like Nonsteroidal Anti-Inflammatory, Chemotherapy, Antibiotics, Antiarrhythmics, Antihypertensive (e.g. Misoprostol, Quinidine, Olsalazine, Colchicine, Metoclopramide, Cisapride)

Public frequently approach the community pharmacists to answer health-related queries as they are easily reachable, knowledgeable and dispense drugs in accordance with legal and ethical permission, either on prescription or as Over-The-Counter drugs [12-14]. In general, community pharmacists encounter on an average of 20 cases of diarrhea in a day which increases more than 45 cases a day in summer around Bhavani and Komarapallayam. To provide a quality service, community pharmacists should have updated knowledge on the management of diseases. Hence the present study was aimed to evaluate the knowledge of community pharmacists in the management of diarrhea in adult.

## MATERIALS AND METHODS

The study was carried out prospectively in potential community pharmacies in and around Bhavani and Komarapallayam areas. A total of 100 community pharmacists who met all inclusion criteria and none of the exclusion criteria were included in the study.

**Inclusion criteria and exclusion criteria**

Both male and female staff above 18 years of age, who have pharmacy qualification, were included in the study. However, helpers working in community pharmacies without a pharmacy qualification were excluded from the study.

**Data collection**

The data were collected using a well-designed '*Interview Questionnaire Form*'. The questionnaire was organized under two sections. The first section focused on the general information about the community pharmacists and the second section focused on prevalence and knowledge of community pharmacists in the management of diarrhea in adults. A brief introduction about the study and participant written informed consent section were also included in the questionnaire. Designed questionnaire was subjected to peer review for the relevance of contents.

During interview, community pharmacists were briefed about the nature and the expected outcome of the study by the study personnel and collected data were documented in '*Interview Questionnaire Form*'. Written informed consent was obtained from the participants prior to start of study related interview. Questioned unanswered by the participants were left blank and participants denied to answer a question were scored off.

**RESULTS AND DISCUSSION**

Data collected from 100 community pharmacists were compiled, analysed and discussed below. None of the participants denied or unanswered for a particular question.

**Table 2: Summary of General Information**

<b>Gender</b>	
Male	75
Female	25
<b>Age</b>	
18 - 20	00
21 - 30	44
31 - 40	32
41 - 50	24
<b>Qualification</b>	
D.Pharm	72
B.Pharm	28
<b>Experience</b>	
10 to 15 years	05
07 to 10 years	10
05 to 07 years	40
01 to 05 years	35
□ 1 year	10

**Participant's General Information**

Study included 75 male and 25 female community pharmacists and 44% of them were in the age group of 21-30 years of age. Community pharmacists in the study either had a Diploma in Pharmacy (72%) or Bachelor of Pharmacy (28%) as qualification and 40% of them had 5-7 years experience as a community pharmacist. Summary of participant's general information are listed in table 2.

### Prevalence of diarrhea in adult

About 35-40% community pharmacists reported that approximately 16-25 customers approach community pharmacists for the treatment of diarrhea in adult every day which may be due to poor sanitation, lack of good drinking water and water pollution created by dying industries. About 65% community pharmacists reported that prevalence rate would increase more than 45 cases a day during summer which may be due to increased prevalence of heat-stable enterotoxin producing organisms such as *Rotavirus* and *E.coli* [15-16]. Prevalence of diarrhea in adult is listed in table 3.

**Table 3: Prevalence of adult diarrhea**

Prevalence Range per day	Number of community pharmacists reported	
	In general	Summer
01 - 10	00	00
11 - 15	25	00
16 - 20	40	00
21 - 25	35	00
26 - 35	00	05
36 - 45	00	30
> 45	00	65

### Knowledge of community pharmacist in the management of diarrhea in adults

#### Diagnosis

Collection of basic information about the patient and disease may help the community pharmacists in identifying the cause of diarrhea, selection of right drug and right dose. The present study revealed that almost all community pharmacists enquire some basic information about the patient and disease like age, gender, duration and severity of diarrhea.

Certain drugs may cause diarrhea by following mechanisms (a) Damaging intestinal mucosa membrane which leads to malabsorption which in turn results in diarrhea, (b) By accumulating acetylcholine in the parasympathetic nerve synapses which excites the muscles of the gastrointestinal tract causing increased motility which leads to diarrhea, (c) Stimulating cyclic AMP in the colonocytes and cause net fluid secretion which leads to diarrhea, (d) Concentration-dependent inhibition of ATPase which leads to diarrhea, (e) increase osmolality in the lumen of the intestine disrupting the normal water gradient which leads to diarrhea, (f) Affecting the immune and non-immune host defences of the gastrointestinal tract and increasing the risk of infective diarrhoea and alteration of gut microflora by antibiotics [17-18]. However, only 2% community pharmacists enquire regarding medication history.

Food poisoning, eating too many fibre filled foods, spicy foods, gluten containing foods can cause diarrhea however, only 20% of community pharmacists enquire regarding food taken.

Most drugs taken by the pregnant and lactating women can expose and adversely affect the growing foetus and infants. Hence community pharmacists should have the knowledge about the safety of drug while dispensing drugs to pregnant and lactating women and lack of knowledge will increase the risk of foetus and infants. It is utmost duty of community pharmacists to enquire information regarding pregnancy and lactation prior to dispensing [19]. However, only 3% of community pharmacists enquire regarding pregnancy and none of them enquire regarding lactation.

Acute diarrhea is the most common illness among travelling populations and bacteria such as *E. coli*, *Campylobacter*, *Salmonella*, and *Shigella* are the most common pathogens that causes of traveller's diarrhea [20,21]. Hence it is essential to collect the information regarding recent travel but none of the community pharmacists enquire regarding recent travel.

Information regarding the associated digestive symptoms such as abdominal pain, bloating, nausea, vomiting may help the community pharmacists to identify the cause of infection and provide supportive therapy. Information regarding the dehydration symptoms such as fatigue, dark coloured urine, dry skin and light-headedness may help the community pharmacists to identify the degree of dehydration but study result showed that only 3% of community pharmacists enquire regarding associated symptoms.

### Basic in treatment of diarrhea

Basically, treatment of diarrhea aims to replace the lost fluids and electrolyte by means of oral rehydration therapy which prevent death associated with dehydration and acidosis [22-24]. The study result showed that only 15% community pharmacists reported that electrolyte and fluid replacement is the basic in treatment of diarrhea and about 73% community pharmacists reported treatment with drugs like loperamide and diphenoxylate is basic in treatment of diarrhea.

**Table 4: Knowledge of community pharmacist in the management of diarrhea in adults**

	Parameter	Community Pharmacists
Basic information about patients and disease	Age	100
	Gender	100
	Duration and severity of diarrhea	90
	Medication history	2
	Food taken	20
	Pregnancy	3
	Nursing mother	0
	Recent travel	0
	Associated symptoms	3
Basic treatment	Treatment with drugs	73
	Electrolyte and fluid replacement	15
	Change in dietary habits	10
	Treatment with vitamin supplement	2
Treatment duration	Single dose	30
	Two dose	62
	Two days	8
	> Three days	0
Expert opinion	Yes	66
	No	34
	Diarrhea more than a week	62
	Diarrhea with blood in stools	20
	Severe case of diarrhea with vomiting/fever	18
Advice given by pharmacists	When to take the drug	65
	How to take the drug	60
	Reconstitution of oral rehydration powder	2
	Drink a lot of water to avoid dehydration	15
	Glucose water	6
	Avoid spicy food item	14

**Treatment duration**

Acute diarrhea usually will be mild, self-limited and responds within 5 days to simple rehydration and drug therapy. About 30-62% community pharmacists reported that 1-2 doses a day will be usually dispensed to the patients.

**Expert opinion**

Expert opinion is vital in case of severe diarrhea, diarrhea with blood, chronic diarrhea, diarrhea not responding to OTC drugs, diarrhea in pregnancy and lactation women and diarrhea with fever and vomiting. Study result showed that about 66% community pharmacists reported that patient will be advised to consult doctor in case patient have diarrhea more than a week, diarrhea with blood in stools, severe diarrhea with vomiting and fever.

**Patient counselling**

Patient counselling regarding how and when to take drug, Complication of dehydration and prevention of dehydration using oral rehydration powder, how to reconstitute oral rehydration powder, importance of personal hygiene, basic sanitation, good drinking water and when to seek expert opinion are required to be provided to patients during dispensing to speed up the recovery from diarrhea, prevent spreading of diarrhea and to prevent landing in serious complication respectively. However, study results showed that about 60-65% community pharmacists advice patient regarding how and when to take the drug, only 2% community pharmacists advice about reconstitution of oral rehydration powder, about 15% community pharmacists advice to drink lot of water to avoid dehydration and about 14% community pharmacists advice to avoid spicy food item. None of the community pharmacist advise patient about the importance of personal hygiene, basic sanitation, good drinking water and when to seek expert opinion. Summary of the Knowledge of community pharmacist in the management of diarrhea in adults is listed in table 4.

**CONCLUSION**

The study results showed that most community pharmacist were not enquiring the patient regarding food taken, recent travel, medication history, pregnancy, nursing mother, and associated symptoms in diarrhea which may lead to wrong diagnosis, drug-drug interaction, toxicity to the foetus, toxicity to the breast feeding babies, ignorance of major health issues. Most of the community pharmacists were not aware of the basic in treatment of diarrhea which is the replacement of lost electrolyte and fluid. Few community pharmacists were not recommending patient to seek expert opinion in severe cases of diarrhea. Most of the community pharmacists were not counselling the patient regarding the complication of dehydration and prevention of dehydration using oral rehydration powder, how to reconstitute oral rehydration powder, importance of personal hygiene, basic sanitation, good drinking water and when to seek expert opinion. Public approach the community pharmacists to get treatment for their health related issues. To provide a quality service community pharmacists should updated their knowledge on the management of disease and regular refresher courses has to be conducted by pharmacy colleges to educate community pharmacists to upgrade the knowledge in the disease management.

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