



ASSESSMENT OF THE CURRENT PRACTICE REGARDING ANTI-FUNGAL DRUGS MANAGEMENT BY PHARMACIST/DOCTOR IN MORADABAD

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ABSTRACT

Key Words

Fungal infection,
Pharmacist/Doctor



Fungi are heterotrophic microorganisms that are illustrious from algal by the absence of photosynthetic skill. They differ from the bacteria by greater size and possession of such intracellular structure as nuclear membrane and mitochondria. Generally, in small cities large no of fungal patients visit chemist shop and took medicine with or deprived of recommend from over the counter. Current learning deal with detailed in attention on appraising the part of pharmacist/doctor in supervision fungal disease. pharmacist facilitated in out in handling fungal infection to some extent by recommending drug either in single or grouping form but they don't know about the which patient to test, what test to order, what accurate medical treatment to use, and what step to take in case of fungal contamination.

INTRODUCTION:

The word fungi are a universal term that includes both yeasts and mold. The former is spherical, oval, or elongated cells that usually reproduce by the budding and from the hype, tangled masses of hype, tangled masses of hype constitute mycelia, and these appear as dry colonies on agar surface or in natural habitats.¹ Mycotic infections of humans are conveniently divided into three groups.

- (1) The dermatophytes consist of contagious superficial skin contaminations are restricted to the epidermal region.
- (2) (candidosis, moniliasis) Candidiasis and disturb the skin and mucous membranes, and occasionally

becomes systemic; that disease is not contagious.

- (3) The subcutaneous, pulmonary, lymphatic and systemic Mycoses are not contagious; they are triggered by free-living saprophytes that invade the skin, lungs and lymphatic tissues.

Mycotic contaminations are treated by Antifungal agents. This growth is due to the in portion to better-quality recognition and diagnosis of fungal infections, but also to the prolonged persistence of a patient with global defects in their host defense mechanisms, including patients with neoplastic diseases, organ transplant recipients, diabetics, and patient AIDS. ² These patient populations are susceptible to

an ever-growing list of apprentice fungi. Fungi, like the human host, are eukaryotic organisms, and thus the number of appropriate targets for the therapeutic attack is limited. However, report many new natural products antifungal attempts at reformulating existing drugs and understanding of pharmacokinetics profiles, mode of act and toxicities of drugs is changing the scenario of antifungal therapies. 3 Fungal sicknesses can move to anybody, knowledge about them can support you and your doctor classifies the indications of a fungal illness early and may support stop serious difficulty. Fungal sickness is often foundation by fungi that are mutual in the atmosphere. Most fungi are not hazardous, but some types are injurious to health. The mild fungus skin disease can appearance like a impetuous and are very joint. Fungal disease in the lungs is frequently like other illness such as the flu or tuberculosis. Almost of the fungal disease like fungal meningitis and bloodstream contaminations are fewer common than skin and lungs but can be lethal. 4

Categories of Fungal Infections-

If have the ever had athlete's foot or a yeast contamination, you can blame of a fungus. A fungus is a original organism. Mushrooms, mold, and mildew are illustrations. The fungi live on air, in the soil, on plants, and in water and Some aware in the human body. Only about half of all types of fungi are injurious. 5 Some fungi duplicate through tiny spores in the airborne. You can inhale the spores or they can land-living on you. As a result, fungal infections often twitch in the lungs or on the skin. You are more likely to get a fungal infection .6 Fungi can be problematic to destroy. For skin and pin infections, you can put on for medicine directly to the infested area. Oral antifungal medicines are also obtainable for thoughtful contamination.

Skin: - Fungal contamination of the skin very joint and include athlete's foot, jock itch, ringworm and yeast infections. 7

Athlete's foot: - Athlete's foot also so-called tinea pedis, is a fungal contamination of the foot. It reasons flaking, soreness, itching, burning and sometimes swellings and sores. Athlete's foot is a very joint contamination. The fungus grows best in sincere, moist atmosphere such as shoes, socks, swimming ponds, storeroom and floors of community baths. 8 It is most common in the summer and in warm, moist climates. It happens additional often in people who wear close-fitting shoes and who use public baths and pools. Athlete's foot is caused by a minute fungus that lives on dead tissue of the hair, toenails, and outer skin film. There are at least four types of fungus that can cause athlete's foot. The most joint of these fungi is Trichophyton rub rum. Signs and indications of athlete's foot vary from creature to creature. A common symptom includes:

- Detaching, cracking, and mounting of the feet
- Redness, swellings, or softening and infringement down of the skin.
- Eager, burning, or both

Kinds of Athlete's Foot

- **Interdigital:** Also called toe web contamination, this is the most joint kind of athlete's foot. It usually happens between the two smallest toes. This system of athlete's foot can cause itching, red-hot, and scaling and the contamination can spread to the single of the foot.
- **Moccasin:** A moccasin-type contamination of athlete's foot can twitch with a minor annoyance, dryness, itching, or scaly skin. 9 As it grows, the skin may congeal and cracks. This contamination can include the entire solitary of the foot and extend onto the boundaries of the foot.
- **Vesicular:** This is the least joint kind of the athlete's foot. The disorder usually begins with a

unexpected outbreak of fluid-filled swellings under the skin. Most often, the blisters develop on the underside of the foot.

KINDS OF FUNGAL DISEASE

Fungi are everywhere, there are almost 1.5 million diverse species of fungi on earth, but only about 300 of those are recognized to type people sick. Fungal disease is frequently triggered by fungi that are common in the environment. Fungi live out-of-doors in soil and on plants and trees as well as on many inside shells and on human skin. Most fungi are not unsafe, but some types can be injurious to health.

- **Aspergillosis:** - Candidiasis can arise in the mouth and throat, vagina, or the bloodstream.
- **Neoformans infection:** - Produced by *Cryptococcus neoformans*, which can contaminate the brain (meningitis) in the people with HIV/AIDS. 10
- **Fungal eye infection:** - Different kinds of fungi can cause eye infections. These are infrequent but can grow after an eye injury.
- **Mucormycosis:** - A infrequent infection that mainly touches people with declining immune system.
- **Ringworm:** - A common fungal skin infection that often looks like a circular rash.
- **Other pathogenic fungi:** - *Exserohilum* and *Cladosporium* are two examples of environment molds. 11
- **Blastomycosis:** - Caused by the fungus *Blastomyces*, which lives in moist soil in parts of the United States and Canada.
- **Histoplasmosis:** - Produced by the fungus *Histoplasma*, which lives in the atmosphere, often in association with large quantities of bird or a bat dropping.

Pathogenic fungi are fungi that produced disease in humans or other creatures. Their study of pathogenic fungi is mentioned to as "medical mycology". 12 Although fungi are eukaryotic organisms, many pathogenic fungi are also microorganisms. Fungicides, such as serum are used to defend plants against fungal contamination.

- *Candida*
- *Aspergillus*.
- *Cryptococcus*
- *Histoplasma*.
- *Pneumocystic*

ANTIFUNGAL DRUGS

An antifungal medicine is a pharmaceutical fungicide used to extravagance and stop Mycoses such as athlete foot, ringworm Candidiasis serious systemic contamination such as cryptococcal meningitis and other such medications are typically got by a doctor's treatment but a few are obtainable OTC (over the counter)¹³ In the United States, only 10 antifungal medications are nowadays accepted by the Food and Drug Administration (FDA) for the treatment of systemic fungal contagions. These drugs belong to major classes: polyenes, pyrimidines, and azoles. Drugs that belong to other classes are also approved as up-to-date antifungal drugs, but will not be careful further here. Although predictable amphotericin B (Fungizone) leftovers the regular treatment for many invasive or life-threatening my- suitcases, this polyene drug is associated with significant poisonousness, including infusion-related events, such as chills, fever, pain, biliousness and sickness, and dose-limiting nephrotoxicity. In adding, the scientific efficacy of amphotericin B in some locations (e.g., Mold disease such as invasive aspergillosis in severely I'm-immunocompromised patients) is suboptimal.¹⁴ Thus, three new lipid preparations of amphotericin B (amphotericin B lipid complex, amphotericin B cholesterol sulfate, and liposomal amphotericin B) have been industrialized and recently accepted by the FDA. These lipid preparations offer several recompenses

over predictable amphotericin B, include- in augmented daily dose of the parental drug (up to 10-fold), high tissue concentrations in the primary reticuloendothelial organs (lungs, liver, and spleen), reduction in infusion-associated cross effects (especially liposomal amphotericin B), and noticeable decrease in nephrotoxicity. 15 Though the therapeutic: poisonous ratio of these mixtures is clearly better-quality, superiority in clinical efficacy has not been definitively recognized in the head- to-head proportional hearings, either a lipid preparation versus conventional amphotericin B or 1 lipid preparation versus a- other lipid formulation. Furthermore, this lipid formulations of amphotericin B are considerably more luxurious than conservative amphotericin B, ranging from 10- to 20-fold higher in cost per dosage. In addition, the best daily or a total dose of these lipid mixtures has not been established. 16 Accordingly, unanswered queries and controversy abound about several issues relating to these 3 lipid agents.

INFECTION SYMPTOMS

A yeast contamination is caused by an overgrowth of fungus usually found in the body. The organism candida albicans is typically responsible for greatest infections. It can be produced by the variety of reasons, counting tight clothing feminine product pregnancy, diabetes and the use of certain medicinal. Here are approximately strategies that can help you stop infection.

- Dry vaginal area methodically after showering or swimming. A moist environment inspires the growth of yeast.
- Avoid wearisome tight clothing such as tight pants nylon panties pantyhose or clothing made of synthetic materials such as polyester.

ANTICIPATION OF FUNGAL INFECTION IN PATIENTS WITH CANCER WITH ANTIFUNGAL DRUG

- ❖ Cancer patients receiving chemotherapy or a bone marrow move are at risk of fungal infection. These can be life threatening, particularly when they

spread over the body. Those patients with low white cell counts are, particularly at risk.17

- ❖ Antifungal drug re often gives as a dull prevents measure. Or when people who are at risk have a fever. The appraisal found that intravenous amphotericin B could reduce the number of deaths. 18 Three of the drug amphotericin B, fluconazole and itraconazole reduced fungal contamination
 - ❖ Systemic fungal contamination is an important cause of morbidities and humanity in cancer patients, particularly those with neutropenia antifungal drug is often assumed prophylactically or empirically to patients with determined illness. 19
- Take care with the resulting
 - ❖ Nail cutters and particularly files need to be substituted or sanitized in the clinic
 - ❖ Finger nail, as well as toenails, needs to be checked for contamination and treated
 - ❖ Skin infection needs to be spoke and treated

FLUCONAZOLE

- It is the water soluble triazole consuming a wider range of movement than KTZ indication include cryptococcal meningitis complete and mucosal candidates in both normal and immunocompromised patient's coccoidal meningitis and histoplasmosis. 20
- Fluconazole is 94%absorbed oral bioavailability is not artificial by food or gastric pH. It is primarily excreted unaffected in urine with a T1/2 of 25-30 HR. Fungicidal concentration is attained in nail vagina and saliva diffusion into the brain and CSF is good. Dose reduction is needed in renal injury. 21

ADVERSE EFFECTS

- Fluconazole products few cross effect effects: mostly nausea,

vomiting, abdominal pain rash, and pain.

- Discernment for fungal cytochrome p450 is advanced, unlike KTZ it does not inhibit steroid synthesis in man: anti androgenic and other endocrine side belongings have not occurred. 22
- Elevation of hepatic transaminase has been noted in AIDS patients.
- It is not optional in pregnant and lactating mothers

INTERACTION

- Though it touches hepatic drug metabolism to a lesser extent than KTZ augmented plasma level of phenytoin, astemizole, cisapride, cyclosporine, warfarin, zidovudine and sulfonyl urea have been experiential a few cases of ventricular tachycardia have been stated when fluconazole was assumed cisapride. 23

DOSE

- 50 MG, 150 MG, 200MG,400MG, OD in one week

USE

- Fluconazole can be managed orally as well as in (in same infections)
- A single 150mg oral dose can cure virginal candidates with insufficient relapses.
- Oral fluconazole (150mg/day for 2 weeks) is highly real in or pharyngeal candidiasis but is reserved for cases not responding to up-to-date antifungals. 24

THE ANTIBIOTIC DRUGS ARE STUDY

ANTIBIOTIC 25

- Polyenes: amphotericin B(AMB), Nystatin, Hamycin, Natamycin,(pimaricin)
- Heterocyclic- benzofuran, griseofulvin

ANTIMETABOLITE 26

- flucytosine (5-FC)

Azole 27

- Imidazole(topical)-clotrimazole, econazole, miconazole, oxiconazole
- Imidazole (Systemic) -ketoconazole
- Triazole(systemic)-fluconazole, itraconazole, voriconazole

Materials and methods-

The study was directed randomly by buying the drugs for patients of different age. The survey form designed and questionnaires were included, open/closed and yes/no question were asked randomly from selected 90 pharmacist\doctor. The study was conducted amongst the pharmacist of Moradabad who collaborated well during this study. The study was conducted in the subsequent step.

Step-1: To purchase the drugs from 90 pharmacists for antifungal

Step-2: The questionnaires were ready and asked from pharmacist

- Whether pharmacist dispensed the drugs
- Whether the patient was referred to Doctor.
- Whether the pharmacist prescribed only antifungal drug or precaution was given.
- Whether they can enquire about the severity\history of disease.

Step-3: The drugs were categorized and the results were evaluated and interpreted. After group, the date the necessary interpretation was done and the consequence of the study were retrieved.

DISCUSSION:

A total number of 90 pharmacists were enrolled into the study. In this study, it was observed that pharmacists 94.44% prescribed drugs but 6.66% pharmacist recommended going to the doctor. it was also detected that most of the pharmacist set in the single dose or combination of drugs. The pharmacist who given the single dose

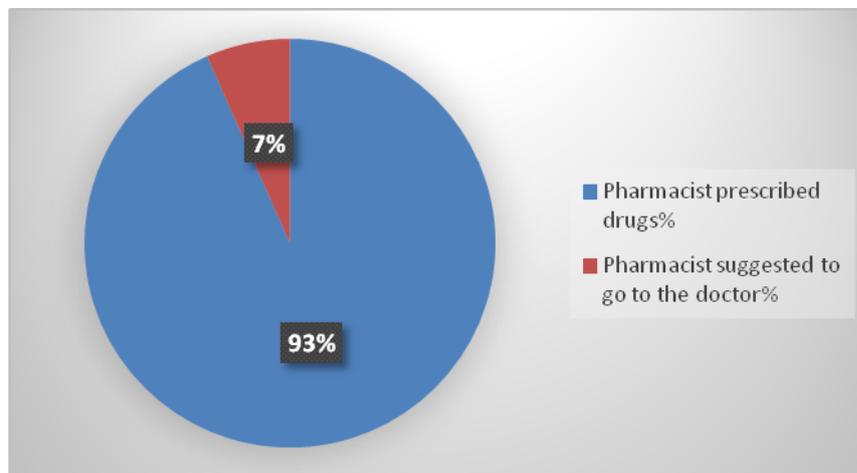
62.22% and whose pharmacist given in the two-drug combination that's are 37.77 %. In the study of combination of two drugs the pharmacist given fluconazole+ivermectin is 23.95% and the pharmacist who send to the

doctor that's are 5.14%. in the combination of fluconazole+ clotrimazole are 10.14% and the pharmacist who send to the doctor that's are 5.14%.

Table.1 Pharmacist prescribed the drug and suggested going to the doctor.

S.NO	Pharmacist	Pharmacist prescribed drugs		Pharmacist suggested going to the doctor	
		Number	%	Number	%
1	90	81	94.44	9	6.66

Among the 90 pharmacists, 94.44% prescribed drugs but 6.66% pharmacist suggested go to the doctor.



Pie Chart of Pharmacist prescribed drug and suggested go to doctor

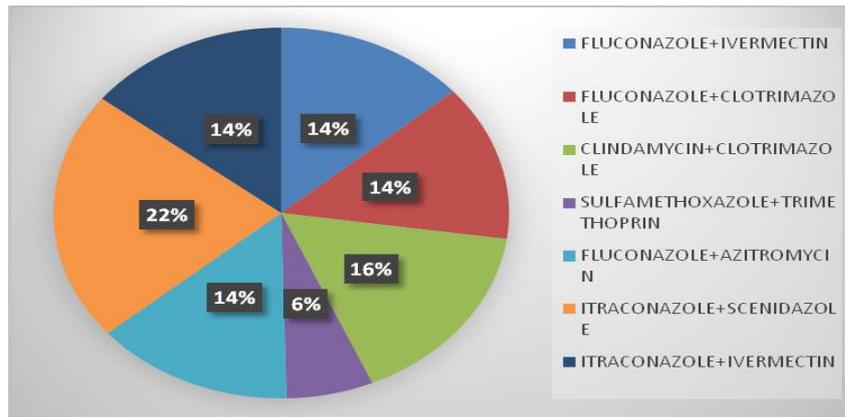
S.NO.	Combination and suggestion to doctor	No. of Pharmacist	%
1	Two drug combinations	56	62.22
2	Suggestion to the doctor	34	37.77

Table.2 Pattern of a combination of drugs prescribed.

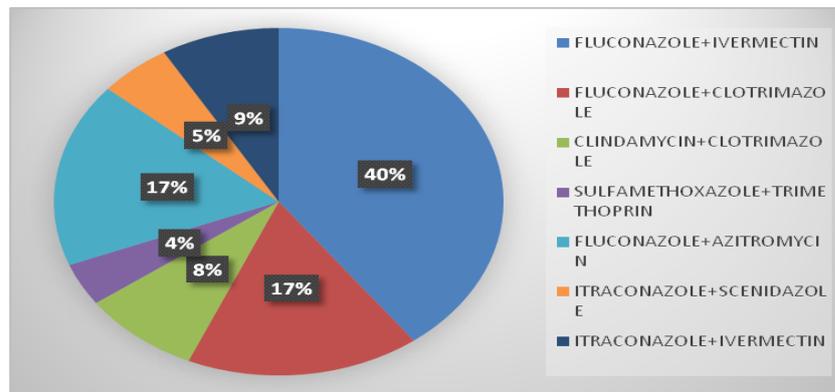
In table exemplified the most usually used grouping medications by the pharmacist Is two drug combinations

S. no	Drug Combinations	Pharmacist (%)	Doctor (%)
1	Fluconazole+ivermectin	23.95	5.14
2	fFluconazole+ clotrimazole	10.14	5.14
3	Clindamycin+clotrimazole	5.14	6.12
4	Sulfamethoxazole+trimethoprin	2.39	2.33
5	Fluconazole+azitromycin	10.36	5.34
6	Itraconazole+scenidazole	5.14	8.23
7	Itraconazole+ivermectin	5.14	5.44

Table.3: Most frequently used combination



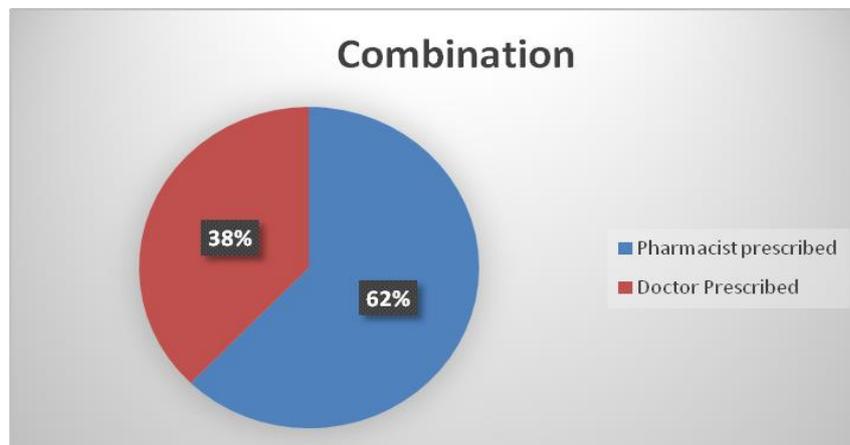
Pie Chart of pharmacist suggestion to the doctor



Pie Chart of pharmacist Given the drug in combination

Table.4 Pattern of a combination of drugs prescribed.

S.NO.	Drug Combination	Pharmacist prescribed	Doctor Prescribed
1	Combination	56	34



Pie Chart of Pattern of combination of drugs prescribed

In combination with two drug the pharmacist given clindamycin+clotrimazole are 5.14% and the pharmacist who send to the doctor that's 6.12%. in combination of two drug the pharmacist given sulfamethoxazole+trimethoprin is 2.39 % and the pharmacist who send to the doctor that's are 2.33%. in combination of two drug the pharmacist given fluconazole+azitromycin are 10.36 % and the pharmacist who send to the doctor that's are 5.34%. in combination of two drug the pharmacist given itraconazole+scenidazole are 5.14% and the pharmacist who send to the doctor that's are 8.23 %. in combination with two drug the pharmacist given itraconazole+ivermectin are 5.14 % and the pharmacist who send to the doctor that's are 5.44 %. in this study, the ivermectin used mostly in the combinations and sulfamethoxazole is given in the combinations of drugs infrequently. the pharmacist given most of the pharmacist decided drug no. of cases very few fonts the patient the doctor and given only at advice without taking the much information about type and cases of the antifungal. They simple dispensed the drug either in single and double drug combination but double drug combination was frequently use compared to single and triple combination most frequently prescribed combination. A pharmacist most regularly used in the conduct of fungal it would because this drug is good for bacterial fungal because high concentration is present in the but many cases of fungal substituting lost fluid and salt are the only treatment needed. The WHO meeting of Expert concluded in 2001 that there are programmatic advantages of using a single Irsay's 200 for all cases of fungal in all ages. This newly improved fluconazole was optional by WHO as the universal clarification for all ages and all types of antifungal. Patients must read in part the enclosed data sheet of the medicine. 28 For sample, the azole antifungals such as ketoconazole or itraconazole can be together substrates and inhibitors of the P-glycoprotein, which (among other functions) excretes toxins and medications into the intestines. Azole antifungals also are

together substrates and inhibitors of the cytochrome P450 family producing augmented concentration when administering, for example, calcium channel blockers, immunosuppressants, chemotherapeutic drugs, benzodiazepines, tricyclic antidepressants, macrolides, and SSRIs. Before oral antifungal treatments are used to treat nail disease, a validation of the fungal infection should be made. 29 Almost half of suspected cases of fungal contamination in nails have a non-fungal cause. The side effects of oral behavior are significant and people without an infection should not take these drugs.

Some additional drug was used for anti-fungal may or may not be vital because the administration of acute anti-fungal by talking which patient to test, what to order, what medical treatments to use, and what stages to take ensure that fitting public fitness actions are applied. So, Pharmacist somewhat plays an standing role in the case of anti-fungal because in emerging countries most of the people are unfortunate and were not talented to pay a high quantity of consultant fee of Doctors. So that of the people used to take medications from over the counter. 30

Side effect of antifungal-

- Feeling sick
- Abdominal pain
- Flatulence (wind)
- Headache
- A rash
- Indigestion

CONCLUSION:

Pharmacist somewhat helped in prescribing the accurate medicine for treating fungal infection but they don't know about the which patient to test, what test to order, what accurate medical treatment to use, and what step to take in case of fungal infection.

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