

Short Communication

The Significance of Patient Counseling on Treatment Outcome of Patients with Superficial Fungal Infections in a Tertiary Level Hospital in Bangladesh

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ABSTRACT

Patient counseling (PC) is critical in helping patients understand their diseases and medications, as well as addressing patient's needs and expectations. It is widely recognized as an invaluable tool for improving treatment adherence and outcomes for various medical conditions. PC in developing countries is usually done by healthcare professionals such as physicians. This work aims to emphasize the importance of patient counseling regarding clinical outcomes. In this study, 39 patients with Superficial fungal infections (SFIs) were closely assessed with counseling and follow-up visits by the physician. The findings revealed a significant enhancement in treatment outcomes, as 67% of patients were cured after initial treatment and 23% were cured after the second visit. Approximately 10% of patients experience treatment failure until after the third visit. SFIs cause a significant disease burden globally specifically in developing countries. The results of this study urge healthcare providers to include counseling as an essential component in the management of superficial fungal infections and other chronic diseases such as hypertension and diabetes.

Keywords: Superficial fungal infections, patient counseling, hygiene practices, medication adherence, patient satisfaction.

Introduction

Superficial fungal infections (SFIs) are very common skin infections that affect individuals. SFIs impose a significant burden, with a prevalence of approximately 20-25% among dermatology patients [1]. SFIs can be caused by various types of fungi, including dermatophytes, yeasts, and molds. Common types of SFIs include Tinea species (*T. corporis*, *T. cruris*, *T. pedis*) and Candidiasis [2]. These infections significantly impact quality of life, and are characterized by symptoms such as itching,

redness, scaling, and discomfort. Either topical or systemic antifungal therapy is necessary to effectively manage SFIs. The choice of topical or systemic therapy is dependent on the severity and extent of the infection. Adherence is defined as "the extent to which a person's behavior, taking medication, following a diet, and/or executing lifestyle changes, corresponds with agreed recommendations from a health care provider" [3]. Adherence to the prescribed treatment, patient's hygiene practices, and attendance to follow-up visits all influence the outcome of therapy. Patient counseling plays a crucial role in modifying patient

behavior, improving treatment adherence, and achieving better treatment outcomes [4]. Through counseling, patients can be educated about the importance of maintaining personal hygiene, disease patterns, adhering to their medication schedule, and attending regular follow-up visits for progress monitoring. A counseling session facilitated by healthcare professionals ensures that patients not only receive vital educational information about their medication but also it provides an opportunity for them to ask any questions they may have. It is important to note that in the United States, patient counseling is not just best practice, but it is also mandated by many state pharmacy practice acts [5].

This brief article is a part of the one research project titled "Investigating Antifungal Resistance in Superficial Fungal Infections on Previously Treated Patients in a Tertiary Level Hospital in Bangladesh". This short communication specifically emphasizes the significance of patient counseling in enhancing treatment outcomes and encourages healthcare providers to supplement treatment with patient counseling as a way of managing superficial fungal infections.

Methods

The study was conducted at a hospital located in the capital city of Bangladesh involving patients diagnosed with SFIs. The patients were approached and invited to participate in the study, with their consent obtained by Dr. Fatema Akhter, the attending physician, and one of the PI's of this research project. The treatment outcomes were evaluated based on factors such as response to treatment, time to resolution, recurrence rate, and patient satisfaction. The study followed a structured approach to patient counseling, including the following steps:

- Educate the patients about the nature of fungal infections, including causes, risk factors, and common symptoms, clarifying the type of infection they are dealing with.
- Explain how the infection spreads, emphasizing that it is a contagious disease, and the importance of taking essential steps

to avoid spreading it to other family members.

- Emphasize the significance of maintaining personal hygiene, keeping the affected area dry, and avoiding excessive use of soap. Recommend medicated soap or shampoo containing ketoconazole for regular use.
- Highlight that the treatment is usually lengthy, and the significance of the importance of completing the full course of medication with the proper dosage for better outcomes.
- Provide patients with a printed copy of instructions on how to apply and take the medication effectively.
- Advise patients against using any form of steroid, such as topical, oral, or injectable, which may exacerbate the infection.
- Mention the possibility of antifungal resistance in some cases and explain that if improvement is not seen after at least two weeks of oral antifungal treatment, the medication may need to be adjusted. Emphasize the importance of timely follow-up visits.
- Encourage patients to keep their environment well ventilated to aid in the treatment process.
- Warn against scratching the affected area to prevent secondary bacterial infections.
- Conduct routine investigations for every patient, especially liver and kidney function tests, before prescribing oral antifungal medication. If abnormalities are detected in liver or kidney function, adjust the drug dosage accordingly. For diabetic patients, emphasize the importance of controlling blood sugar levels effectively.

Results and discussion

This brief communication features the first 39 patients out of 100 participants diagnosed with superficial fungal infections. The focus of this communication is to assess the impact of patient counseling on treatment outcomes for fungal infections. Figure 1 presents the demographic information of the 39 patients, while Figure 2

illustrates the treatment outcomes at the first and second visits for four different types of fungal infections. The study found that patient counseling had a significant impact on the treatment outcome of SFIs. The recurrence rate was significantly lower.

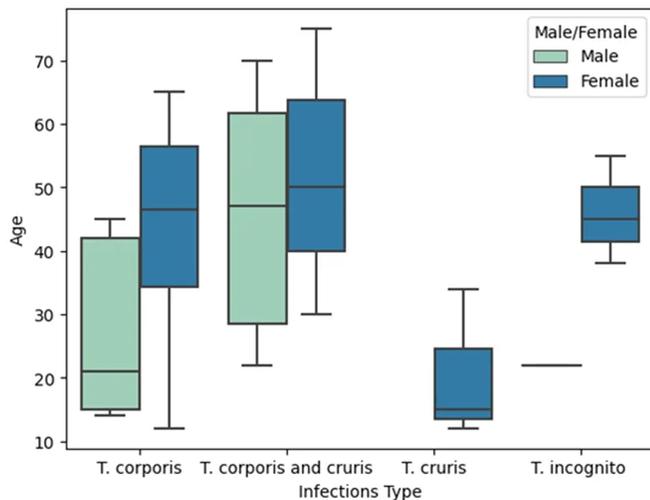
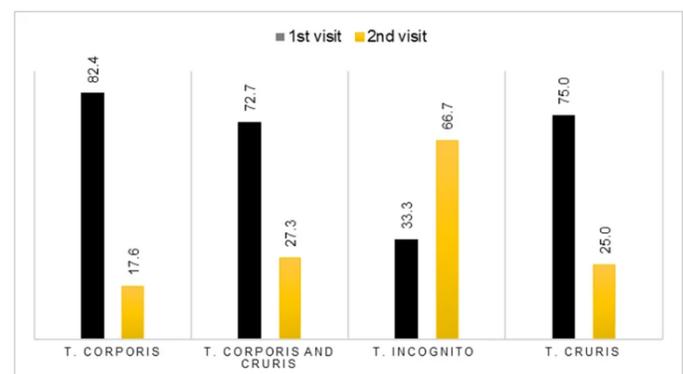


Fig. 1 Patient demographic data. Comparison of different types of skin infection prevalence between genders for different ages are presented in the above box plots. Plots showing the occurrence of the diseases such as *T. corporis*, and dual infection with *T. corporis* and *cruris* are more prevalent in males than in females. On the other hand, females are more susceptible to *T. incognito* and *T. cruris* infections. From our data, it has been observed that the *T. cruris* infection was prevalent in the ages ranging from 12 to 34 years, whereas for *T. incognito* it was 38 to 55 years.

Superficial Fungal Infections have a high recurrence rate in Bangladesh; this is likely due to the lack of knowledge among patients about the disease. Many patients are unaware that these infections are contagious, which leads to easy spread among other family members. Another factor that contributes to the high rate of recurrence is the initial misuse of medication. Patients often take medicine based on the advice of unqualified individuals or purchase topical steroid creams from medicine shops, which can worsen the infection rather than treat it effectively. It is important to consider the healthcare infrastructure in Bangladesh as well. The country had a large population of 169 million people in 2023 [6],

with a significant portion residing in rural areas (68%). This limited access to healthcare professionals such as Doctors, pharmacists, and nurses. The density of healthcare professionals per 10,000 people in 2020 was only 9.9, significantly lower than the global median of 48 [6,7]. Therefore, there is a considerably high patient-to-doctor ratio, resulting in doctors typically having few minutes to see each patient. Consequently, patients often seek the expertise of specialists, who themselves are overwhelmed with a high volume of patients daily. As a result, most of the specialists are extremely busy and may not have the time needed to adequately explain diseases or educate patients on treatment strategies.



[N =39: (1St Visit: 66.7%, 2nd Visit: 23.1%, Did not Cure after 2nd Visit: 5.1%, Did not Report: 5.1%), N =39: *T. corporis* (43.6%), *T. corporis* and *cruris* (28.2%), *T. incognito* (7.7%), *T. cruris* (10.3%)]

Fig 2: Treatment outcomes. The bar diagram shows the overview of the percentage recovery rate after the first and second visits and patient counseling for different types of fungal infections. Out of 39 patients, a total of 89.8% of patients were cured after the first and second visits, while 5.1% were not cured after the second visit and the remaining 5.1% did not maintain the follow-up activities. Although the durations of infections (3 to 12 months) before the visit are different for each category after patient counseling recovery rates for individually infected patients were quite similar. For *T. corporis*, *T. cruris*, and both *T. corporis* and *cruris* infected patients' recovery rate after the first visit showed more than 70%, whereas for *T. incognito* 66.7% of patients recovered after the second visit.

SFIs pose a substantial global health burden. In regions like Africa and parts of Asia with lower socioeconomic conditions compared to Europe and the Americas, factors like crowded living spaces, close human-to-human contact, and inadequate hygiene create ideal environments for the spread of dermatophytes. Limited access to healthcare in developing countries may lead to misdiagnosis or delayed treatment of infections [8].

As SFIs are a global issue, the author believes the above scenario is very similar to other developing countries. This lack of communication can lead to patients not fully understanding the importance of following the prescribed treatment plan for their condition. These factors, combined with a lack of knowledge and inappropriate treatment, contribute to the recurrence of Superficial Fungal Infections. The findings highlight the importance of patient counseling in the management of SFIs. Patient counseling helped to improve treatment adherence, promote hygienic practices, and enhance patient understanding of the disease. All of which led to better treatment outcomes. The significant reduction in recurrence rate is an indication of how patient counseling is beneficial long term.

"In this study, careful review of patient cases led to a significant disclosure: while some treatments were considered appropriate, the key to successful outcomes lay not in changing medications, but in emphasizing patient counseling. By focusing on enhancing patient knowledge and adherence, I was able to achieve excellent results, with all patients successfully cured. This underlines the vital role of patient education and engagement in treatment success, highlighting that sometimes the best medicine is a deeper understanding of the disease. Educating patients about the appropriate use of medications, the importance of seeking timely medical advice, and the potential risks of using topical corticosteroids incorrectly can play a vital role in preventing Tinea incognito. Empowering patients with knowledge can lead to better outcomes and prevent the progression of the disease." Dr. Fatema Akhter, PI. Effective patient counseling can have several significant benefits for patients with recurrent fungal infections:

- Improved Treatment Compliance
- Enhanced Symptom Management
- Prevention of Recurrences
- Empowerment and Emotional Support
- Prevention of many health hazards due to taking multiple drugs.

The typical patient healthcare process for treating a fungal infection in developed countries would involve the following steps:

- The patient notices a fungal infection and visits a pharmacy to seek a recommendation from the pharmacist regarding over-the-counter (OTC) therapy.
- The pharmacist counsels the patient on how to use the medication, emphasizes the importance of completing the entire treatment course, and explains the expected timeframe for seeing or feeling results. Mostly, they are cured by the OTC treatment recommended by the pharmacist.
- If it fails to effectively treat the infection, the patient decides to consult a doctor for further evaluation and treatment. The doctor examines the patient, prescribes a medication based on the lab test report/evaluation, and provides additional counseling.
- The patient returns to the pharmacy to pick up the prescribed medication, where the pharmacist once again counsels the patient on proper usage, treatment duration, and expected outcomes.
- The patient completes the prescribed treatment, and the fungal infection resolves within a few weeks. The physician follows up with the patient to ensure that no further treatment is required.
- If the patient feels that the infection has not completely resolved, the patient schedules a follow-up appointment with the physician to seek further treatment.

Conclusion

It is essential to consider these geographical and socioeconomic factors when addressing this issue

in different populations. SFIs are a prevalent issue worldwide, but they are more common in developing countries and regions with lower income levels, poor living conditions and humid and warm climates. These findings accentuate the critical importance of patient counseling in promoting treatment adherence, enhancing patient education, advocating for preventive measures, and improving treatment outcomes for superficial fungal infections. Implementing comprehensive counseling programs that focus on hygiene practices, medication adherence, and follow-up visits lead to positive patient response. Responses such as, effectively enhance treatment outcomes, reduce recurrence rates, and increase patient satisfaction. Additionally, counseling programs would be beneficial in the management and treatment of almost all types of diseases, especially chronic disease states such as hypertension and diabetes. A potential solution to enhance patient counseling and address this issue could involve the incorporation of community pharmacies, and hospital pharmacies in all private and government hospitals.

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Conflict of interest

The authors declare no Conflict of interest.

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1. The logo was updated on June 13, 2024.