

# Dermatology urgent care model reduces costs and healthcare utilization for psychodermatology patients—a retrospective chart review

Jacob Johnson<sup>1</sup> MD MA, Brett Cutler<sup>1</sup> BS, Emile Latour<sup>2</sup> MS, Jesse J Keller<sup>1</sup> MD MCR

Affiliations: <sup>1</sup>Department of Dermatology, Oregon Health and Science University, Center for Health and Healing, Oregon, USA, <sup>2</sup>Biostatistics Shared Resource, Knight Cancer Institute, Oregon Health and Science University, Oregon, USA

Corresponding Author: Jacob Johnson MD MA, C/o Jesse J. Keller MD MCR, Department of Dermatology, Oregon Health and Science University, Center for Health and Healing, Building 1, 3303 South Bond Street, Portland, OR 97239, Email: [jjp2109@gmail.com](mailto:jjp2109@gmail.com)

## Abstract

**Background:** Patients with psychiatric dermatoses may be high users of healthcare, especially emergency services. A dermatology urgent care model may reduce healthcare utilization in this population.

**Objective:** To determine whether a dermatology urgent care model can reduce healthcare utilization among patients with psychiatric dermatoses.

**Methods:** We conducted a retrospective chart review of patients seen in dermatology urgent care at Oregon Health and Science University between 2018 and 2020 with diagnoses of Morgellons disease and neurotic excoriations. Rates of diagnosis-related healthcare visits and emergency department visits were annualized before and during engagement with the dermatology department. Rates were compared using paired t-tests.

**Results:** We found an 88.0% reduction in annual rates of healthcare visits ( $P < 0.001$ ) and 77.0% reduction in emergency room visits ( $P < 0.003$ ). Results were unchanged when controlled for gender identity, diagnosis, and substance use.

**Limitations:** We could not account for healthcare use not included in electronic health record.

**Conclusion:** Urgent care models in dermatology may reduce overuse of healthcare and emergency services among patients with psychiatric dermatoses.

provoke psychiatric perturbations such as depression or anxiety. Alternatively, psychiatric distress has been shown to exacerbate existing dermatologic disease [1]. A third category includes conditions in which a primary psychiatric cause underlies a real or perceived dermatologic condition. This category encompasses the psychiatric dermatoses, including trichotillomania, neurotic excoriations, and delusional parasitosis. Psychiatric dermatoses are a common and challenging issue within the field of dermatology. They are highly distressing to patients, can be disfiguring, and may lead to significant medical complications. Comorbid substance use disorders pose additional challenges. Psychiatric dermatoses are notoriously frustrating for patients and providers alike.

Classically, those with psychiatric dermatoses actively seek out dermatology care and refuse mental health referrals, especially in the case of delusional parasitosis. A 2012 retrospective study at the Mayo Clinic revealed that delusional parasitosis patients most often presented initially to dermatology clinics, followed by internal medicine, or emergency medicine departments [2]. Only 2% of patients presented initially to a psychiatry department. This disparity is a common feature of somatic delusional disorders—patients reject the notion that their condition is psychological and seek biomedical explanations for their symptoms. Thus, the mantle often passes to dermatologists to treat patients whose mental health needs are often outside their scope of practice. Patients with neurotic excoriations are similarly resistant to seeking medical help due to shame surrounding

*Keywords: healthcare utilization, psychodermatology*

## Introduction

An intimate connection exists between psychiatry and dermatology. Dermatologic conditions may

their condition and may present initially to dermatologists [3]. Although patients with psychiatric dermatoses frequently seek out specialty medical care, unpredictable and distressing flares of their symptoms can lead them to the emergency department. Patients may also engage in doctor shopping, by seeking out care with multiple providers. One study found that delusional parasitosis patients presenting to the University of Washington emergency department and infectious disease clinic had seen an average of 6.3 doctors in their search for a cure [4]. Frequent low-yield encounters exacerbate the frustration that accompanies these conditions, with 63% of delusional parasitosis patients endorsing dissatisfaction with medical care [4]. Diagnosis may similarly play a role in patient dissatisfaction, as patients increasingly have access to medical records and may reject terms such as delusions of parasitosis. In these cases, Morgellons disease (MD) may be a more acceptable alternative diagnosis and is frequently used as an eponym to preserve patient rapport. Patients with Morgellons classically present complaining of fibers or other materials in the skin, but it is often used as an umbrella term for all patients who report unusual skin sensations, with those who have delusions of parasitosis lying on the more severe end of the spectrum.

To optimize effective triage and utilization of healthcare resources, recognition of psychodermatologic conditions is of growing importance. Within this field, treatment of monosymptomatic delusional disorders is perhaps most challenging. Patient factors may include lack of insight into their condition, low trust of medical providers, inconsistent follow up, and suboptimal medication adherence. Provider factors may include lack of training in the management of psychiatric patients and resultant low comfort. Patients with psychiatric dermatoses are often high utilizers of healthcare, including emergency services, thus there is a need for more effective care models [2,4].

Psychodermatology clinics can provide a pathway to safe, effective, and supportive treatment. Multidisciplinary psychodermatology clinics have been shown to be cost-effective and improve

diagnostic accuracy [5,6]. Unfortunately, these clinics are rare in the United States. Patients with psychiatric dermatoses continue to face significant barriers to care, including a shortage of psychodermatology specialists and long wait times. These factors likely contribute to high healthcare costs and utilization. Thus, we propose an urgent care model as one possible solution for decreasing healthcare over-utilization among patients with psychiatric dermatoses.

To our knowledge, the impact of other dermatology care models in the field of psychodermatology has not been reported. At the Oregon Health and Science University dermatology department, we have developed an urgent care model in which a twice-weekly clinic is staffed by a single dermatologist with no specialized or additional training in psychiatric dermatoses. Patients were regularly scheduled for follow-up every four weeks. During acute flares, patients were instructed to reach out to the provider for guidance using MyChart, and responded to accordingly within 24-48 business hours. Herein, we demonstrate that our model, by allowing patients to regularly connect with a trusted provider and receive care during acute crises, can substantially reduce overall healthcare utilization and costs associated with emergency department care. Decreased utilization of emergency services is desirable not only from a cost-savings standpoint, but also is particularly prudent in the current setting of a global pandemic.

## Methods

We conducted a retrospective chart review using charts from patients seen by the senior author (JK) in an outpatient dermatology urgent care clinic at Oregon Health and Science University (OHSU). As the clinical approach represents the intervention of interest in this study, our clinical approach is described in detail below.

Common approaches to Morgellons patients involve a focus on rapport-building and gaining therapeutic buy-in from the patient [7]. In our clinic, rapport is initially established by giving patients time to speak in an unrushed fashion. Thus, we allow 40-minute

appointments for new patients with a concern of Morgellons. If the patient speaks uninterrupted for an unsustainable length of time we begin to redirect by asking closed-ended questions to reestablish bidirectional flow of conversation. We perform a thorough skin examination. Labs are performed for complete metabolic panel, complete blood count with differential, thyroid stimulating hormone, and ferritin. We do this to look for causes of systemic pruritus such as renal, hepatic, or thyroid dysfunction. It is also helpful to be aware of any potential renal dysfunction when dosing systemic medications such as gabapentin. We look for eosinophilia because this can indicate overlap with atopic dermatitis/prurigo nodularis and opens the door to potential use of systemic therapies such as methotrexate or dupilumab. We check ferritin because iron deficiency anemia has been reported to cause delusional parasitosis in one case report [8].

We generally discourage skin biopsies in the absence of primary skin lesions as they are time-consuming and low-yield in this situation. When patients ask us to examine debris we accept the samples and quickly examine grossly or dermoscopically, then reassure them that no insects were visualized. If pointed out by the patient, we will acknowledge fibers or fuzz visualized without further explanation (although these likely represent clothing fibers that become adherent to serum that naturally occurs in the healing process of excoriated lesions).

In general, we do not attempt to strongly confirm or refute the existence of parasites or fibers as these convictions can be quite fixed and patients can be very sensitive to direct challenges regarding these beliefs. Disagreement can contribute to a combative relationship with healthcare providers, doctor shopping, and frequent urgent care and emergency room visits. We aim to find common ground by acknowledging the severity of the patient's illness and their need to regain health and function. We avoid the term "delusional parasitosis" with patients and instead opt for the more neutral "Morgellons disease." This nomenclature has been used successfully in other psychodermatology clinics as a technique for building rapport with patients [9].

Years of experience tell us that off-label use of antipsychotic medication is the most efficacious treatment and leads to rapid improvement. However, in general patients are offended at the notion that their condition has any relation to mental health; thus this can be a delicate conversation. We generally prescribe pimozide and frame it as off label use of a neurologic medication, as its sole FDA-approved indication is Tourette syndrome. Patients are much more likely to take a neurologic medication than a psychiatric medication, and so pimozide is a common antipsychotic of choice for patients with Morgellons [10].

It is important to keep in mind that any degree of mistrust will lead to nonadherence. In general, we screen patients to determine whether they would be poor candidates for pimozide adherence. The factors we have found helpful to predict this are anger at being previously labeled delusional or prescribed antipsychotics. Being highly internet-savvy is also suggestive of poor candidacy. In the absence of these factors we typically prescribe pimozide at the first visit.

For other patients, establishing rapport may require more time and multiple visits as trust is built longitudinally. We generally start with medications such as gabapentin, duloxetine, naltrexone, or doxepin as these can provide partial relief but may not be curative. This is a helpful test for patients to demonstrate whether they trust their provider enough to adhere to prescribed medications. It also builds trust that the provider is actively working on improving their condition. Thus, after partially successful trials of these medications, they are eventually more willing to entertain pimozide.

Pimozide is prescribed at 1-2mg nightly depending on patient weight and degree of distress. Each month, the dose is increased by 1mg as needed (but no more than 3mg) to achieve control of symptoms and then held steady for three months. Then, each month, the dose is decreased in 0.5mg increments until discontinuation.

Patients are generally scheduled for monthly follow ups. If they call before that time with a flare up, we schedule a 10-20 minute telephone visit within 1-3

days and do this no more than twice a month. If they send a MyChart message using the patient portal, we generally respond within 24 hours. We find that it is not the length or depth of the response that is important to patients, but the simple fact that they are acknowledged and their message was returned.

We reviewed charts from a 2-year period between March 2018 and March 2020. International Classification of Diseases 10 (ICD10) diagnoses searched included delusions of parasitosis, Morgellons disease (MD), neurotic excoriations (NE), formication, infestation, and prurigo nodularis. The two latter billing codes were applied only for purposes of maintaining patient rapport; patients with true prurigo nodularis were not included in the analysis. In addition, patients diagnosed with delusions of parasitosis were ultimately counted along with those diagnosed with MD, as this may be used as an eponym for delusions of parasitosis, particularly when this diagnosis would be rejected by patients who have access to the medical record.

Charts were screened for patients who had a minimum of two dermatology encounters (in-person, virtual, telephone, or MyChart), separated by no more than 12 months. We defined the pre-dermatology phase as 12 months prior to the first encounter with a dermatologist. We defined the dermatology phase as the time period between initial and final dermatology visits. The number of total non-dermatology healthcare visits for a psychiatric dermatosis was used to calculate an adjusted annual rate of healthcare utilization. A paired t-test was used to compare adjusted annual rate of healthcare utilization before and during dermatology engagement. Linear mixed effects modelling was then used to calculate the change in annual healthcare utilization rate while adjusting for covariates of interest and respecting the paired data structure.

A secondary aim of the study was to collect clinical and demographic data on this population. This included documenting the patient's diagnosis (MD or NE), age, gender identity, race/ethnicity, past medical history, prescription medication use, and substance use. We collected information on the type of other specialists involved in our patients' care.

## Results

A total of 99 charts were identified that met the initial search criteria based on ICD10 diagnoses. Of these, 30 were excluded because they did not meet inclusion criteria based on a minimum of two dermatology encounters. A further 9 charts of these were ultimately not included in statistical analysis due to lack of pre-dermatology encounters, although they were included in demographic data.

**Table 1** presents demographic information on the patient population. The patients were predominantly female (78.3%), white (84.1%), and middle-aged with an average age of 54.4 (SD 11.4). Nearly half (49.3%) carried a diagnosis of major depressive disorder, followed by anxiety (36.2%) and chronic pain (30.4%). A smaller number were diagnosed with PTSD, fibromyalgia, and bipolar disorder at similar rates. Relatively few patients were diagnosed with a personality disorder (4.3%) or primary psychotic disorder/schizophrenia (2.9%). In terms of substance use, the highest percentage of patients (21.7%) used amphetamines, whereas a smaller percentage (7.2%) used opioids and other unspecified substances.

The majority of patients were diagnosed with MD (81.2%). The most common form of healthcare use was primary care (62.3%), followed by emergency department (39.1%) and general urgent care (20.3%). Few patients had care established with a mental health provider (4.3%). Patients seen in dermatology urgent care on average had treatment phases lasting 9.3 months with an average of 5.3 encounters during that time. The most common medication prescribed at these encounters was pimozide (72.5%), followed by naltrexone (21.7%). Selective serotonin reuptake inhibitors were prescribed in a small number of cases (5.8%).

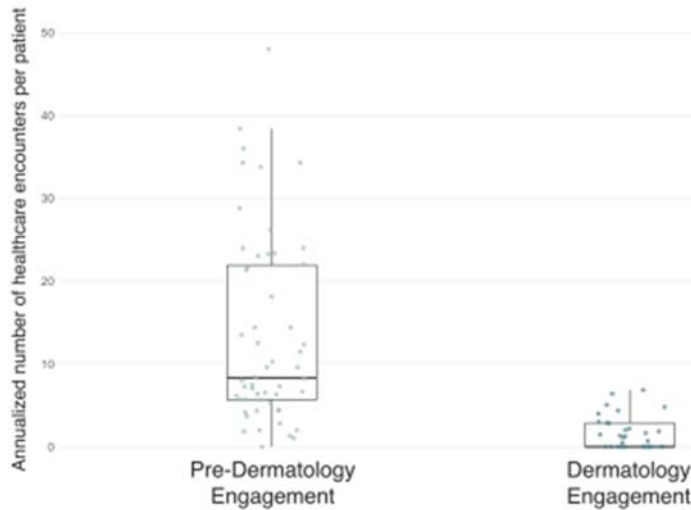
Prior to engagement with a dermatologist, the average annual rate of diagnosis-related healthcare encounters was 17.3 (SD 23.3) per patient per year. While established with dermatology, this declined to 3.3 (SD 8.1), (**Figure 1**). The number of outside encounters per patient per year decreased by 15.2 encounters (95% CI: 8.9 to 21.4 fewer encounters),

**Table 1.** Characteristics of the patient population.

Characteristic	Number available	All subjects
N		69
<b>Diagnosis (%)</b>	69	
	MD	56 (81.2)
	NE	13 (18.8)
<b>Age at first encounter (mean (SD))</b>	69	54.43 (11.39)
<b>Gender (%)</b>	69	
	Female	54 (78.3)
	Male	15 (21.7)
<b>Race/ethnicity (%)</b>	69	
	Caucasian	58 (84.1)
	Black or African-American	3 (4.3)
	Hispanic or Latino	2 (2.9)
	Other	6 (8.7)
<b>Past medical history (%), more than one response allowed</b>	69	
	Depression	34 (49.3)
	Anxiety	25 (36.2)
	PTSD/trauma	10 (14.5)
	Schizophrenia/schizoaffective	2 (2.9)
	Bipolar	7 (10.1)
	Personality d/o	3 (4.3)
	H/o psych hospitalization	2 (2.9)
	Chronic pain	21 (30.4)
	Fibromyalgia	8 (11.6)
	Movement disorder	1 (1.4)
	None of the above	19 (27.5)
<b>Rx use (%), more than one response allowed</b>	69	
	SSRI	17 (24.6)
	SNRI	10 (14.5)
	Antipsychotic	6 (8.7)
	Opioid	18 (26.1)
	Amphetamines	10 (14.5)
	Dopamine agonist	3 (4.3)
	Antimicrobials/antiparasitics	7 (10.1)
	None of the above	20 (29.0)
<b>Illicit drug use (%), more than one response allowed</b>	69	
	Opioids	5 (7.2)
	Amphetamines	15 (21.7)
	Other	5 (7.2)
	None	47 (68.1)

( $P < 0.001$ , paired t-test). This represented an 88.0% reduction in healthcare encounters from baseline. Of 55 subjects with at least one healthcare encounter before dermatology intervention, 33 (60.0%) had

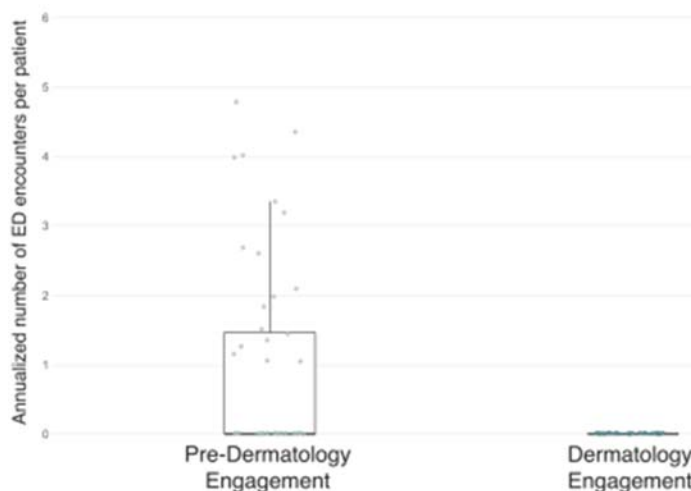
zero non-dermatology encounters during their time with dermatology. Using a linear mixed effects model, we found nearly identical results which remained statistically significant after adjusting for



**Figure 1.** Annualized rate of all diagnosis-related outside healthcare encounters prior to and during dermatology engagement.

gender identity, diagnosis, and substance use ( $P < 0.001$ ).

This analysis was repeated focusing solely on ED visits. Prior to engagement with our dermatology intervention, the average annual rate of diagnosis-related ED encounters was 3.0 (SD 5.8) per patient per year. While established with dermatology clinic, this declined to 0.7 (SD 2.6), (**Figure 2**). The number of ED encounters per patient per year decreased by 2.3 encounters (95% CI: 0.8 to 3.8 fewer encounters), ( $P < 0.001$ , paired t-test). This represented a 77.0% reduction in ED encounters from baseline. Of 26 subjects with at least one ED encounter prior to



**Figure 2.** Annualized rate of diagnosis-related encounters with emergency services alone prior to and during dermatology engagement.

dermatology intervention, 17 (65.0%) had zero encounters in the treatment phase. Using a linear mixed effects model, we found nearly identical results which remained statistically significant after adjusting for gender identity, diagnosis, and substance use ( $P = 0.003$ ). However, substance use was statistically significant in the adjusted model with the other covariates (adjusted  $P = 0.010$ ). Those using substances had on average 2.6 more ED encounters (95% CI: 0.7 to 4.6 more) than those who did not use substances. The impact of substance use on rates of ED utilization did not change before and after engagement with our dermatology intervention (adjusted  $P = 0.119$ , non-significant interaction term in linear mixed effects model).

## Discussion

Our study investigates the use of a dermatology urgent care model in the management of patients with psychiatric dermatoses. This model offers both rapid access as well as longitudinal and supportive care, thereby consolidating the burden of healthcare utilization in this high use population. Herein, we demonstrate an 88% reduction in healthcare encounters overall.

This study isolates one dimension of the dermatology urgent care model, namely its ability to reduce the number of healthcare visits in this population by offering urgent access. In the United States, where the average cost of an emergency department visit was estimated to be \$1,118 in 2018, we predict that our model could have a substantial impact [11]. In addition to cost-savings benefits, the importance of decreasing emergency department visits, general urgent care, and primary care utilization cannot be understated, especially in the context of a global pandemic. We encourage hospital systems and dermatology departments to consider the importance of investing in a dermatology urgent care model and/or psychodermatology specialist to optimize effective triage and utilization of healthcare resources. Dermatologists can play a primary role in leading this initiative, as they are often the first providers patients turn to when their symptoms appear and may be

more apt to forming a longitudinal patient-provider relationship [2,12]. And although psychiatric involvement is ideal for these patients in theory, low acceptance from patients with somatic delusional disorders renders this approach less effective in reality.

Psychodermatology patients may appear challenging to dermatologists, but there are strategies to facilitate these often-difficult patient interactions. As with most patients, the best initial approach includes thorough rapport building and reassurance [13]. In the case of delusions of parasitosis, some dermatologists have found that using the term "Morgellons Disease" to refer to the condition is helpful because it does not contain the implicit notion that the patient is "delusional" [14]. In some cases, it may be reasonable to prescribe a short course of topical antiparasitic medication in order to build trust with the patient [7]. The ultimate goal of rapport building is to gain enough trust that they become open to psychiatric medication, which is the most helpful therapy for these patients [15].

There are a number of future directions for this study. One planned analysis using this data will involve regression to see if diagnosis, frequency of dermatology encounters, duration of treatment, or medication adherence have a significant modifying effect on reduction in healthcare utilization. We did not evaluate outcomes or response to pharmacotherapy, and this could be another future goal.

Limitations to this study are inherent to chart review. We only had access to charts that were available in

Epic or Care Everywhere, which excludes documentation from outside systems that do not communicate with ours. However, after being newly referred into our system we would expect encounters within our system to increase, not decrease. Thus, the effect seen in our study may be an underestimate. Another limitation is that this cohort was managed by an individual provider (JK) so results may not be generalizable. In particular, we were unable to isolate the effect of the individual provider from the urgent care model itself. Regardless, our study merits further investigation into an urgent care dermatology model's impact on cost-savings benefits as well as improved access within healthcare systems.

## Conclusion

Psychodermatology is a complex, multidisciplinary field that necessitates trusted, longitudinal relationships and provides safe and cost-effective treatment. Unpredictable flares can be distressing and lead to patients seeking urgent care or emergency services where they can access providers at a moment's notice. Patients with these conditions may be frequent utilizers of healthcare. At institutions without a dedicated psychodermatology clinic, a dermatology urgent care model can be an effective alternative for reducing rates and costs of healthcare use, particularly relating to emergency medical services.

## Potential conflicts of interest

The authors declare no conflicts of interest.

## References

1. Arndt J, Smith N, Tausk F. Stress and atopic dermatitis. *Curr Allergy Asthma Rep.* 2008;8:312-317. [PMID: 18606083].
2. Foster AA, Hylwa SA, Bury JE, et al. Delusional infestation: clinical presentation in 147 patients seen at Mayo Clinic. *J Am Acad Dermatol.* 2012;67:673.e1-10. [PMID: 22264448].
3. Flessner CA, Woods DW. Phenomenological characteristics, social problems, and the economic impact associated with chronic skin picking. *Behav Modif.* 2006;30:944-963. [PMID: 17050772].
4. Boggild AK, Nicks BA, Yen L, et al. Delusional parasitosis: six-year experience with 23 consecutive cases at an academic medical center. *Int J Infect Dis.* 2010;14:e317-e321. [PMID: 19683952].
5. Patel A, Jafferany M. Multidisciplinary and Holistic Models of Care for Patients With Dermatologic Disease and Psychosocial Comorbidity: A Systematic Review. *JAMA Dermatol.* 2020;156:686-694. [PMID: 32347896].
6. Seale L, Gaulding JV, Porto D, Prabhakar D, Kerr H. Implementation of a psychodermatology clinic at a major health system in Detroit. *Int J Womens Dermatol.* 2018;4:227-229. [PMID: 30627622].
7. Patel V, Koo JY. Delusions of parasitosis; suggested dialogue between dermatologist and patient. *J Dermatolog Treat.* 2015;26:456-460. [PMID: 25490455].
8. Sekhon S, Jeon C, Nakamura M, Koo J. Delusional parasitosis secondary to severe iron deficiency anemia. *JAAD Case Rep.* 2017;3:390-391. [PMID: 28879221].
9. Brownstone ND, Koo J. Special Consideration for Patients With

- Morgellons Disease, Even Among Psychodermatology Patients?. *JAMA Dermatol.* 2020;156:1142. [PMID: 32845296].
10. Brownstone N, Koo J. Why is pimozide uniquely useful for the treatment of delusional patients in dermatology?. *J Dermatolog Treat.* 2020;1. [PMID: 32940111].
  11. Moore B, Liang L. Medical Expenditure Panel Survey. 2018. "Emergency Room - Typical Average Cost of Hospital ED Visit." [https://consumerhealthratings.com/healthcare\\_category/emergency-room-typical-average-cost-of-hospital-ed-visit/](https://consumerhealthratings.com/healthcare_category/emergency-room-typical-average-cost-of-hospital-ed-visit/). Accessed on November 29, 2021.
  12. Hylwa SA, Foster AA, Bury JE, et al. Delusional infestation is typically comorbid with other psychiatric diagnoses: review of 54 patients receiving psychiatric evaluation at Mayo Clinic. *Psychosomatics.* 2012;53:258-265. PMID: 22458994].
  13. Heller MM, Wong JW, Lee ES, et al. Delusional infestations: clinical presentation, diagnosis and treatment. *Int J Dermatol.* 2013;52:775-783. [PMID: 23789596].
  14. Murase JE, Wu JJ, Koo J. Morgellons disease: a rapport-enhancing term for delusions of parasitosis. *J Am Acad Dermatol.* 2006;55:913-914. [PMID: 17052509].
  15. Shenoj SD, Soman S, Munoli R, Prabhu S. Update on Pharmacotherapy in Psychodermatological Disorders. *Indian Dermatol Online J.* 2020;11:307-318. [PMID: 32695685].