Prescription Practices Regarding the use of Systemic Drugs in the Management of Patients with Chronic Pruritus amongst Indian Dermatologists – A Questionnaire Based Survey

Abstract

Background: Chronic pruritus poses a significant challenge to treating physicians due to multitude of underlying causes and varying treatment strategies. Several topical, systemic, and physical modalities have been tried with variable success. Prescription practices in chronic pruritus are influenced by differential knowledge and experience of physicians, patient-related factors, and resource availability. **Aim:** The purpose of this survey was to observe the current pattern of practice in Indian dermatologists in the management of chronic pruritus and to identify practice gaps particularly regarding the use of various systemic agents as antipruritics. **Materials and Methods:** A previously validated questionnaire was sent to consultant dermatologists across India between January 2020 and July 2020. The questionnaire was comprised of six questions (multiple-choice questions as well as open-ended questions) regarding the use of antidepressants, cyclic gamma-aminobutyric acid (GABA) analogues, opioid antagonists, antihistamines, and alternate therapies in the management of chronic pruritus. **Results:** A total of 700 dermatologists completed the questionnaire (response rate 70%). Overall, antihistamines were the most common drug prescribed in chronic pruritus (more than 95% respondents). Other systemic agents such as opioid antagonists, gabapentinoids, and antidepressants were prescribed by 22.42%, 71.85%, and 75.29% respondents, respectively, in chronic pruritus as either monotherapy or in combination with antihistamines in specific types of itches. Among antidepressants, tricyclic antidepressants (TCAs) (69.29%) were prescribed most often, followed by selective serotonin reuptake inhibitors (SSRIs) (32.29%) and serotonin and norepinephrine reuptake inhibitors (SNRIs) (9.14%). Other treatment options such as omalizumab, thalidomide, ondansetron, ursodeoxycholic acid (UDCA), and rifampicin were used by 10% respondents to alleviate pruritus in special situations. **Conclusion:** This survey revealed the redundant practice of prescribing antihistamines in chronic pruritus irrespective of etiology among Indian dermatologists. It also revealed a differential approach regarding use of systemic agents such as gabapentinoids, opioid antagonists, and antidepressants, in academic and non-academic institutions. The survey emphasized a barrier in writing prescription of systemic agents such as opioid antagonist and SNRIs due to lack of knowledge and experience, fear of side effects, and inadequate available evidence.

Keywords: *Chronic pruritus, prescription practices, survey, systemic treatment*

Kapil Vyas, Kriti Maheshwari[1], Praveen K. Shanmugam Reddy[2], Rajesh Verma[3], Iffat Hasan[4], Asit Mittal[5]

Department of Dermatology, Venereology and Leprosy, Geetanjali Medical College and Hospital, Udaipur, Rajasthan, [1]Department of Dermatology, Venereology and Leprosy, Government Institute of Medical Sciences, Greater Noida, Uttar Pradesh, [2]Department of Dermatology, Venereology and Leprosy, Ramaiah Medical College, Bengaluru, Karnataka, [3]Major General, Western Command, Chandimandir, Panchkula, Haryana, [4]Department of Dermatology Venereology and Leprosy, Government Medical College Srinagar, University of Kashmir, Jammu and Kashmir, [5]Department of Dermatology, Venereology and Leprosy, Ravindra Nath Tagore Medical College, Udaipur, Rajasthan, India

Address for correspondence:
Dr. Asit Mittal,
Department of Dermatology, Venereology and Leprosy, Ravindra Nath Tagore Medical College, Udaipur - 313 001 Rajasthan, India.
E-mail: asitmittal62@gmail.com

Access this article online

Website: https://journals.lww.com/idoj

DOI: 10.4103/idoj.idoj_500_22

Quick Response Code:

Introduction

Pruritus is one of the common complaints encountered in dermatology clinics. It has varied presentations with either an acute or chronic course. Chronic pruritus is a distressing symptom affecting multiple domains of patient's functionality and adversely impacts the quality of life. It represents a daily diagnostic and therapeutic challenge to clinicians, as well as a unique challenge to investigators, due to a lack of standard method for assessment of this subjective sensation of pruritus.[1] Chronic pruritus is regarded as a complex somatic sensation that is poorly understood and explored. Recent research has deciphered the neuroimmunological links underlying the symptom, and based on these findings,[2] several systemic agents like neuromodulators, antidepressants, immunosuppressives, and biologics have been suggested to have a role in the management of chronic pruritus, but there are no available guidelines or algorithm regarding their use. This is a practice gap that needs to be filled. The first step in this direction is to find out the level of awareness among dermatologists regarding

How to cite this article: Vyas K, Maheshwari K, Shanmugam Reddy PK, Verma R, Hasan I, Mittal A. Prescription practices regarding the use of systemic drugs in the management of patients with chronic pruritus amongst Indian dermatologists – A questionnaire based survey. Indian Dermatol Online J 2024;15:33-8.

Received: 21-Sep-2022. **Revised:** 13-Dec-2022. **Accepted:** 31-Dec-2022. **Published:** 01-Dec-2023.

use of these medications in the management of chronic pruritus. Therefore, we undertook this questionnaire-based survey to know the current practice pattern regarding the use of systemic agents among Indian dermatologists in the management of chronic pruritus.

Materials and Methods

A questionnaire was circulated among the dermatologists in India over a period of 7 months between January 2020 and July 2020 [Proforma 1]. A survey questionnaire was derived from a previously validated questionnaire used in a similar study conducted at Netherlands. The original questionnaire was modified according to our clinical scenario. In the process of modification, we conducted a preliminary pilot testing among 40–50 dermatologists at our region. The feedback from fellow dermatologists was incorporated into the questionnaire. The finally modified questionnaire was circulated in India. The questionnaire was comprised of six questions (multiple-choice questions as well as open-ended questions) regarding the use of antidepressants, cyclic gamma-aminobutyric acid (GABA) analogues, opioid antagonists, antihistamines, and alternate therapies in the management of chronic pruritus. The respondents were also asked about their prescription choices in patients of special population (pediatric, elderly, and pregnancy) with chronic pruritus. Participants were enquired about their demographic and professional data, patient selection for prescribing particular agents, and refraining factors for avoiding a particular drug in their clinical practice. In this survey, chronic pruritus was defined as pruritus of any etiology extending for a period of atleast 6 weeks. Study data was organized based on respondents' responses and subjected to the statistical analysis. Data were displayed as mean and standard deviation for quantitative variables and number and percentage for categorical variables. All statistical analyses were performed with SPSS software (version 20).

Results

Professional and demographic data [Table 1]

A total of 1000 Indian dermatologists were asked to fill the questionnaire. A total of 700 dermatologists returned the completed questionnaire (response rate 70%). Out of these respondents, 235 (33.58%) were practicing in academic institutions and 465 (66.42%) in non-academic hospitals or solo private practice. A total of 192 (27.43%) dermatologists had an experience of less than 5 years, whereas 508 (72.57%) were into dermatology practice for more than 5 years. A total of 288 (41.14%) of the respondents were female, and 412 (58.86%) were male. Average prevalence of chronic pruritus in their practice setup was about 6 per 100 dermatological patients.

Table 1: Demographic details

Sex	Females - 288 (41.14%)
	Males - 412 (58.86%)
Practice setting	Academic institutions - 235 (33.58%), Non-academic institutions or private practice - 465 (66.42%)
Years of clinical experience	<5 years experience - 192 (27.43%)
	>5 years - 508 (72.57%)

Practice pattern of using systemic agents in chronic pruritus

Antihistamines

Most dermatologists, 689 out of 700 (98.43%), preferred antihistamines as the first line of drug in treatment of almost all patients with chronic pruritus irrespective of the etiology. Among them, 180 (26.12%) preferred first-generation antihistamines, 245 (35.56%) chose second-generation antihistamines, and 264 (38.32%) both first- and second-generation antihistamines.

Opioid antagonists [Table 2]

Overall 157 (22.42%) dermatologists prescribed opioid antagonists for patients of chronic pruritus, whereas a

Table 2: Practice pattern of using opioid antagonists in chronic pruritus

Prescription of opioid antagonists for treatment of chronic pruritus	Yes – 157 (22.42%)
	No – 543 (77.58%)
Indication for prescribing opioid antagonists in chronic pruritus	In almost all cases of chronic itch – 3 (1.91%)
	In cases of chronic itch not responding to conventional (antihistaminics) treatment – 41 (26.11%)
	Only in specific itch (neoplastic/paraneoplastic/ neuropathic) – 113 (71.98%)
Specific drug prescribed	Naltrexone – 157
	Butorphanol – 0
Cause for not prescribing opioid antagonists in chronic pruritus	Unaware of its antipruritic effect – 130 (23.98%),
	Fear of side effects – 295 (54.34%),
	Do not think it is effective – 118 (21.68%)
Practice pattern of opioid antagonists in chronic pruritus based on practice setting	Academic institutions – Yes – 81 (34.47%), No – 154 (65.53%)
	Non-academic institutions and private practice – Yes – 76 (16.34%), No – 389 (83.66%)
	P value = <0.0001 (significant)
Practice pattern of opioid antagonists in chronic pruritus based on years of experience	More than 5 years experience: Yes – 141 (27.75%),
	No – 367 (72.25%)
	Less than 5 years of experience:
	Yes – 16 (8.33%),
	No – 176 (91.66%)
	P value = <0.0001 (significant)

comparatively larger proportion did not (77.58%). The most common indication for prescribing opioid antagonists was in patients with specific cause for pruritus, i.e., systemic, neoplastic, or paraneoplastic (71.98%) followed by patients of chronic pruritus not responding to conventional antihistaminics (26.11%). Naltrexone was the only drug prescribed by all the dermatologists in this class of medication. Other available drug in this class, butorphanol, was prescribed by none. Probable reasons could be lack of awareness about this medication among the respondents. Out of the 543 physicians who did not prescribe opioid antagonists, majority stated that they did not do so due to the fear of side effects (54.34%), 130 (23.98%) lacked the appropriate knowledge regarding the antipruritic effect of these drugs and 118 (21.68%) found them to be ineffective. Based on clinical experience, 27.75% of the dermatologists with more than five years experience prescribed these medications, compared to only 8.33% of those with less than five years experience (*P* value = <0.0001). With respect to practice setting, 34.47% of dermatologists working in academic hospitals prescribed naltrexone, wheras the figure was 16.34% in non academic hospitals or private practices. This difference was statistically significant [*P* value = <0.00001].

Cyclic GABA analogues [Table 3]

A total of 503 participants (71.85%) prescribed cyclic GABA analogues for the treatment of chronic pruritus. Among those, 45.55% used cyclic GABA analogues in patients with systemic, neuropathic, or neoplastic causes of chronic pruritus, 39.63% prescribed cyclic GABA analogues in patients of chronic pruritus not responding to conventional antihistaminics, and 14.82% responders used cyclic GABA analogues in almost all cases of chronic pruritus. Pregabalin was used by 72.02%, whereas 58.84% prescribed gabapentin. Among 197 dermatologists (28.15%) who did not prescribe these drugs, the primary reason was lack of awareness or experience regarding the use of this drug (42.13%), 30.96% feared the associated side effects, and 26.91% thought they were ineffective. Based on years of experience, 86.42% of dermatologists with experience more than five years prescribed these drugs compared to 33.33% with an experience of less than five years, and this value was statistically significant (*P* value = <0.00001), whereas 78.72% of dermatologists working in academic institutions prescribed gabapentin and/or pregabalin compared to 68.39% in non academic hospitals or private practice, and this difference was statistically significant (*P* value = 0.0046).

Table 3: Practice pattern of using cyclic GABA analogues in chronic pruritus

Prescription of cyclic GABA analogues for treatment of chronic pruritus	Yes – 503 (71.85%) No – 197 (28.15%)
Indication for prescribing cyclic GABA analogues in chronic pruritus	In almost all cases of chronic itch – 75 (14.82%) In cases of chronic itch not responding to conventional (antihistaminics) treatment – 199 (39.63%) Only in specific itch (neoplastic/paraneoplastic/ neuropathic) – 229 (45.55%)
Specific drug prescribed	Gabapentin – 296 (58.84%) Pregabalin – 363 (72.02%)
Cause for not prescribing cyclic GABA analogues in chronic pruritus	Unaware of its antipruritic effect – 83 (42.13%), Fear of side effects – 61 (30.96%) Do not think it is effective – 53 (26.91%)
Practice pattern of using cyclic GABA analogues in chronic pruritus based on practice setting	Academic institutions : Yes - 185 (78.72%) No - 50 (21.28%) Non academic institutions and private practice : Yes - 318 (68.39%) No - 147 (31.61%) *P* value = 0.0046 (significant)
Practice pattern of using cyclic GABA analogues in chronic pruritus based on years of experience	More than 5 years experience: Yes - 439 (86.42%) No - 69 (13.58%) Less than 5 years experience: Yes - 64 (33.33%) No - 128 (66.67%) *P* value = <0.00001 (significant)

Antidepressants [Table 4]

A total of 75.29% dermatologists prescribed antidepressants for the treatment of chronic pruritus. Among those, 46.11% used antidepressants in patients of chronic pruritus not responding to conventional antihistamines, 44.97% used them in patients with systemic, paraneoplastic, or neoplastic causes of chronic pruritus, and only 8.92% used antidepressants in almost all cases of chronic pruritus. The most common cause of not prescribing antidepressants was fear of the side effects (48.56%), followed by ineffectiveness (33.53%) and 17.91% of the clinicians were unaware of the antipruritic effect of the drugs. A significant disparity was observed on the basis of practice, as 72.47% of dermatologists practicing in non academic hospitals or private practice prescribed antidepressants and 80.85% of those practicing in academic hospitals used antidepressants in the treatment of chronic pruritus (*P* value = 0.0151). Similarly, a statistically significant difference was also observed on the basis of duration of practice, as 83.86% of those with experience more than five years prescribed antidepressants and 52.60% with an experience of less than five years used antidepressants in the treatment of chronic pruritus (*P* value = <0.00001).

Tricyclic antidepressants (TCAs) were the most commonly prescribed group (69.29%) among antidepressants. Among these drugs, doxepin was the most frequently

Table 4: Practice pattern of using antidepressants in chronic pruritus

Prescription of antidepressants for treatment of chronic pruritus	Yes – 527 (75.29%), No – 173 (24.71%).
Indication for prescribing antidepressants in chronic pruritus	In almost all cases of chronic itch – 47 (8.92%) In cases of chronic itch not responding to conventional (antihistaminics) treatment – 243 (46.11%) Only in specific itch (neoplastic/paraneoplastic/ neuropathic) –237 (44.97%)
Specific drug prescribed	Selective serotonin reuptake inhibitors (SSRI) – 226 (32.29%); fluoxetine – 142 (54.41%), fluvoxamine – 14 (5.36%), paroxetine – 56 (21.46%), sertraline – 49 (18.77%) Serotonin and norepinephrine reuptake inhibitors (SNRI) – 64 (9.14%); duloxetine – 45 (70.31%), venlafaxine – 19 (29.69%) Tricyclic antidepressants (TCA) – 485 (69.29%); amitriptyline – 287 (37.03%), nortriptyline – 167 (21.54%), doxepin – 321 (41.41%) Atypical depressants – 34 (4.86%); mirtazapine – 34
Cause for not prescribing Antidepressants in chronic pruritus	Unaware of its antipruritic effect – 31 (17.91%) Fear of side effects – 84 (48.56%), Do not think it is effective – 58 (33.53%)
Practice pattern of using antidepressants in chronic pruritus based on practice setting	Academic institutions : Yes - 190 (80.85%) No - 45 (19.15%) Non academic instituions and private practice: Yes - 337 (72.47%) No - 128 (27.53%) *P* value = 0.015 (significant)
Practice pattern of using antidepressants in chronic pruritus based on years of experience	More than 5 years experience: Yes - 426 (83.86%) No - 82 (16.14%) Less than 5 years experience: Yes - 101 (52.60%) No - 91 (47.40%) *P* value = <0.00001 (significant)

used (41.41%), followed by amitriptyline (37.03%) and nortriptyline (21.54%).

Selective serotonin reuptake inhibitors (SSRIs) were prescribed by 32.29% of participants, and the preferred choices were fluoxetine (54.41%), followed by paroxetine (21.46%), sertraline (18.77%), and fluvoxamine (5.36%).

Serotonin and norepinephrine reuptake inhibitors (SNRIs) were prescribed by 9.14% of the clinicians. The more commonly used drug in this class was duloxetine. Atypical antidepressants such as mirtazapine were prescribed at a lower frequency compared to other groups (4.86%).

Other systemic therapies

Drugs such as rifampicin, ursodeoxycholic acid (UDCA), ondansetron for hepatobiliary itch, thalidomide for chronic prurigo, and omalizumab for itch of chronic spontaneous urticaria were used by 10% of the respondents. The respondents were also asked if they preferred prescribing antidepressants, gabapentinoids, and opioid antagonists in special population groups. About half of those surveyed (52.14%) were comfortable prescribing this class of drugs to the elderly, and 2.85% and 0.85% prescribed them in pediatric age-group and to pregnant women, respectively.

Discussion

This survey was carried out among 700 dermatologists across India with the intent of exploring the current trend in the use of systemic agents in the management of patients with chronic pruritus. Overall, 98.43% of dermatologists prescribed antihistamines, 75.29% prescribed antidepressants, 71.85% prescribed cyclic GABA analogues, and 22.42% prescribed opioid antagonists in patients of chronic pruritus.

Antihistamines were the most routinely used drugs for chronic pruritus and thus, often overused. Antihistamines are the inverse agonist at H1 receptors. Their role in purely histaminergic itches like chronic urticaria is well established.[3] Most chronic itches however are now recognized as non-histaminergic, and antihistamines are not appropriate choice in such cases. Classical antihistamines may however influence pruritus due to their soporific effects.[4] This survey emphasizes the redundant practice of prescribing antihistamines either solely or in combination with other agents in cases of chronic pruritus even when it is not indicated.

A total of 75.29% of the survey participants preferred prescribing antidepressants in patients of chronic pruritus. The most commonly used group was tricyclic antidepressants (69.29%) among which doxepin was the most frequently prescribed. Doxepin's high affinity and antagonism with histamine receptors make it a strong antihistamine agent. Doxepin has 56 times greater affinity for H1 receptors compared with hydroxyzine and 775 times greater affinity compared with diphenhydramine.[5,6]

Most of the dermatologists were thus aware of the antihistamine action of the drug; however on scanning the literature, we found that there are not too many studies which look directly at the antipruritic effect of doxepin in chronic non-urticarial itch. A few studies, however,

have shown the efficacy of oral and topical doxepin in the treatment of pruritus associated with atopic eczema and urticaria.[7-9] The other frequently prescribed TCAs were amitriptyline and nortriptyline. These agents have been established as an effective treatment in neuropathic pain, but evidences of their use in chronic pruritus are lacking.[10] The definitive mechanism by which TCAs reduce pruritus is unknown, but they are thought to reduce itch by inhibiting voltage-gated ion channels in peripheral nerves and the nicotinic acetylcholine receptors in nerves that control pain.[11] Systematic reviews have suggested its use in refractory pruritus not responding to standard therapy.[12] Most patients with chronic pruritus have associated psychological comorbidities. In such clinical scenarios, antidepressants may serve a dual purpose in treating both conditions. It has been observed that antipruritic effect of these agents could be achieved at the lower dosages rather than optimal dose required for their effect on mood. In the survey, we observed that these drugs are not used in appropriate doses due to fear of adverse effects. Common adverse effects are drowsiness, anticholinergic effects, orthostatic hypotension, tachypnea, and cardiac conduction delay.[10,13] Given their side effect profile, TCAs are classified as "potentially inappropriate medications" for elderly adults by the 2019 Beers Criteria.[14] This is depicted in our survey too, participants were relatively reluctant in prescribing TCAs in older patients. Although pre-prescription work-up is not a routine, when prescribing antidepressants, patients should be started on a low dose that is gradually up titrated over the course of weeks to months to avoid untoward adverse effects.

Another class of antidepressants that have found use in chronic pruritus are SSRIs, and fluoxetine and paroxetine were commonly prescribed drugs by the respondents. SNRIs were prescribed by very few respondents, duloxetine was preferred choice. Mirtazapine was found to be useful in chronic pruritus, however, very few prescribed mirtazapine.[15] The use of SSRIs and SNRIs was restricted to specific indications as with neuropathic pruritus, pruritus of systemic or undetermined origin. The precise mechanism of their antipruritic effect is not known, but Zylicz *et al*.[16] have suggested that it may be mediated by downregulation of the excitatory postsynaptic 5HT3 receptor. Dermatologic improvement seems to be independent of changes in psychiatric symptomatology. Anecdotal case reports and few randomized studies have proven their efficacy and safety in chronic pruritus of hepatobiliary origin and pruritus associated with hematological disorders.[17-19]

Cyclic GABA analogues were also frequently prescribed by the dermatologists who participated in the survey. Of the 71.85% dermatologists, 45.55% used them in patients with systemic, neuropathic, or neoplastic causes of chronic pruritus and 39.63% used them in patients of chronic pruritus which was not responding to conventional treatment. Both pregabalin (72.02%) and gabapentin (58.84%) were frequently used. Gabapentinoids are the anticonvulsant class of drugs and inhibit presynaptic voltage-gated calcium channels, thereby decreasing the nerve conduction[20] Although their use in chronic pruritus is supported by open label studies and case reports, still there is lack of good evidence. Both gabapentin and pregabalin can be effective in the management of post herpetic pruritus, uremic pruritus, and generalized pruritus of unknown origin.[21,22] Gabapentin can be used in the treatment of drug-induced pruritus and is also recommended in specialized populations such as elderly for treatment of chronic pruritus. Opioid antagonists drugs were prescribed by only 22.42% of the respondents in chronic pruritus. The major hesitation in prescribing this group of drugs was the fear of the side effects (54.34%). This is increasingly clear now that the imbalance of opioid system may provoke itch. Systemic μ-antagonist and κ-agonists have been found to reduce itch of varied etiology. The μ-opioid antagonist, naltrexone, in a daily dose of 50 mg orally is found to be effective in pruritus of hepatobiliary disease.[23] Few case series and single-arm studies have reported variable responses in other types of itches such as psoriasis vulgaris, prurigo, and cutaneous lymphoma.[24,25]

A similar survey carried out by the Dutch Society of Dermatology and Venereology by Kouwenhoven TA *et al*.[26] reported findings similar to our survey, i.e., while dermatologists are aware of other classes of drugs apart from antihistaminics for the treatment of chronic pruritus, they are hesitant to use them in practice. We carried out this survey as part of IADVL special interest group (SIG) pruritus activity. One of the objectives of forming the SIG on pruritus was to find out the practice gap in management of chronic pruritus. As such, there is no approved medication for chronic itch, and antihistamines are still being used as one size fit for all, in spite of the fact that most of the chronic itches are non-histaminergic. The survey indicated that although a proportion of Indian dermatologists are aware of the potential use of the systemic medications other than antihistamines in management of the chronic pruritus, this awareness needs to be raised further. The incomplete knowledge and lack of proper training regarding the use of these drugs are probably the primary reasons for their underuse. Formulating specific treatment protocols and education regarding the safety, dosages, efficacy, and indications of these drugs can further help in reducing the hesitation of the clinicians and increase their use in clinical practice. SIG pruritus is trying to pursue these goals by organizing CMEs and lectures covering this aspect of chronic pruritus for dermatologists across India.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Reich A, Szepietowski JC. Pruritus intensity assessment: Challenge for clinicians. Expert Rev Dermatol 2013;8:291-9.
2. Graham DT Goodell H, Wolff HG. Neural mechanisms involved in itch, "itchy skin" and tickle sensations. J Clin Invest 1951;30:37-49.
3. Moses S. Pruritus. Am Fam Physician 2003;68:1135-42.
4. Davidson S, Giesler GJ. The multiple pathways for itch and their interactions with pain. Trends Neurosci 2010;33:550-8.
5. Richelson E. Tricyclic antidepressants and histamine H1-receptors. Mayo Clin Proc 1979;54:669-74.
6. Drake LA, Fallon JD, Sober A. Relief of pruritus inpatients with atopic dermatitis after treatment with topical doxepin cream. J Am Acad Dermatol 1994;31:613-6.
7. Groene D, Martus P, Heyer G. Doxepin affects acetylcholine induced cutaneous reactions in atopic eczema. Exp Dermatol 2001;10:110-7.
8. Pour-Reza-Gholi F, Nasrollahi A, Firouzan A, Esfahani EN, Farrokhi F. Low-dose doxepin for treatment of pruritus in patients on hemodialysis. Iran J Kidney Dis 2007;1:34-7.
9. Goldsobel AB, Rohr AS, Siegel SC, Spector SL, Katz RM, Rachelefsky GS, *et al*. Efficacy of doxepin in the treatment of chronic idiopathic urticaria. J Allergy Clin Immunol 1986;78:867-73.
10. Shaw RJ, Dayal S, Good J, Bruckner AL, Joshi SV. Psychiatric medications for the treatment of pruritus. Psychosom Med 2007;69:970-8.
11. Yeo B, Tey HL. Effective treatment of notalgia paresthetica with amitriptyline. J Dermatol 2013;40:505-6.
12. Boozalis E, Khanna R, Zampella JG, Kwatra SG. Tricyclic antidepressants for the treatment of chronic pruritus. J Dermatolog Treat 2021;32:124-6.
13. Gumnick JF, Nemeroff CB. Problems with currently available antidepressants. J Clin Psychiatry 2000;61:5-15.
14. By the 2019 American Geriatrics Society Beers Criteria® Update Expert Panel. American geriatrics society 2019 updated AGS beers criteria® for potentially inappropriate medication use in older adults. J Am Geriatr Soc 2019;67:674-94.
15. Khanna R, Boozalis E, Belzberg M, Zampella JG, Kwatra SG. Mirtazapine for the treatment of chronic pruritus. Medicines (Basel) 2019;6:73.
16. Zylicz Z, Krajnik M, van Sorge AA, Costantini M. Paroxetine in the treatment of severe non-dermatological pruritus: A randomized, controlled trial. J Pain Symptom Manage 2003;26:1105-12.
17. Mayo MJ, Handem I, Saldana S, Jacobe H, Getachew Y, Rush AJ. Sertraline as a first line treatment for cholestatic pruritus. Hepatology 2007;45:666-74.
18. Hegade VS, Kendrick SFW, Jones DEJ. Drug treatment of pruritus in liver diseases. Clin Med (Lond) 2015;15:351-7.
19. Ataei S, Kord L, Larki A, Yasrebifar F, Mehrpooya M, Seyedtabib M, *et al*. Comparison of sertraline with rifampin in the treatment of cholestatic pruritus: A randomized clinical trial. Rev Recent Clin Trials 2019;14:217-23.
20. Yesudian PD, Wilson NJE. Efficacy of gabapentin in the management of pruritus of unknown origin. Arch Dermatol 2005;141:1507-9.
21. Meena M, Vyas K, Balai M, Khare AK, Gupta LK, Mittal A. Efficacy and safety of a sustained-release preparation of pregabalin in chronic pruritus. Indian J Drugs Dermatol 2020;6:93-5.
22. Sreekantaswamy SA, Mollanazar N, Butler DC. Gabapentinoids for pruritus in older adults: A narrative review. Dermatol Ther (Heidelb) 2021;11:669-79.
23. Mansour-Ghanaei F, Taheri A, Froutan H, Ghofrani H, Nasiri-Toosi M, Bagherzadeh AH *et al*. Effect of oral naltrexone on pruritus in cholestatic patients. World J Gastroenterol 2006;12:1125-8.
24. Bigliardi PL, Stammer H, Jost G, Rufli T, Büchner S, Bigliardi-Qi M *et al*. Treatment of pruritus with topically applied opiate receptor antagonist. J Am Acad Dermatol 2007;56:979-88.
25. Metze D, Reimann S, Beissert S, Luger T. Efficacy and safety of naltrexone, an oral opiate receptor antagonist, in the treatment of pruritus in internal and dermatological diseases. J Am Acad Dermatol 1999;41:533-9.
26. Kouwenhoven TA, van de Kerkhof PCM, Kamsteeg M. Use of systemic treatment in patients with chronic pruritus: A survey of dermatologists in the Netherlands. Acta Derm Venereol 2019;99:304-8.

Supplementary File

Proforma 1

USE OF SYSTEMIC DRUGS IN THE TREATMENT OF CHRONIC ITCH

(Defined as presence of itch for more than 6 weeks, with or without skin lesions)

A SURVEY OF DERMATOLOGISTS IN INDIA

NAME -

AGE/SEX -

LOCATION –

PRACTICE SETTING – Academic (teaching) hospital/ Non academic hospital/ private practice

EXPERIENCE – less than 5 years/ 5-10 years/ more than 10 years

Q1. Do you prescribe **antidepressants** as antipruritic agents in your patients of **chronic itch**?

(a) YES, in almost all cases of chronic itch
(b) YES, but only in cases of chronic itch not responding to conventional (antihistaminics) treatment
(c) YES, but only in specific itch (systemic/ paraneoplastic/ neuropathic)
(d) NEVER

- If your answer is "YES", what all drugs do you prescribe?

(a) Selective serotonin reuptake inhibitors (SSRIs) ---------- Fluoxetine / Fluvoxamine/ Paroxetine/ Sertraline
(b) Serotonin and norepinephrine reuptake inhibitors (SNRIs) ---------- Venlafaxine/ Duloxetine
(c) Tricyclic antidepressants (TCAs) ---------- Amitriptyline/ Nortriptyline/ Doxepin
(d) Atypical antipsychotics ---------- Mirtazapine

- If your answer is "NEVER", please specify the reason?

(a) Unaware of it's antipruritic effect
(b) Don't think it is effective
(c) Fear of side effects

Q2. Do you prescribe **cyclic gamma-aminobutyric acid (GABA) analogues (Gabapentin/Pregabalin)** as antipruritic agents in your patients of **chronic itch**?

(a) YES, in almost all cases of chronic itch
(b) YES, but only in cases of chronic itch not responding to conventional (antihistaminics) treatment
(c) YES, but only in specific itch (systemic/ paraneoplastic/ neuropathic)
(d) NEVER

- If your answer is “YES”, what all drugs do you prescribe?

(a) Gabapentin
(b) Pregabalin

- If your answer is “NEVER”, please specify the reason.

(a) Unaware of it’s antipruritic effect
(b) Don’t think it is effective
(c) Fear of side effects

Q3. Do you prescribe **opioid antagonists** as antipruritic agents in your patients of **chronic itch**?

(e) YES, in almost all cases of chronic itch
(f) YES, but only in cases of chronic itch not responding to conventional (antihistaminics) treatment
(g) YES, but only in specific itch (systemic/ paraneoplastic/ neuropathic)
(h) NEVER

- If your answer is “YES”, what all drugs do you prescribe?

(a) Naltrexone
(b) Butorphanol

- If your answer is “NEVER”, please specify the reason.

(a) Unaware of it’s antipruritic effect
(b) Don’t think it is effective
(c) Fear of side effects

Q4. Do you prescribe above mentioned drugs in chronic itch encountered in **special populations** also?

(Elderly/ Pediatric/ Pregnancy)_____

Q5. Please mention what **other drugs** do you use for **chronic itch** in your practice ?

_____

Q6. Do you still **prefer antihistaminics** as first line agents in almost all patients of chronic itch ?

(a) YES ---------- 1st generation/ 2nd generation/ Both
(b) NO