

# Factors associated with non-adherence in treatment of chronic dermatological disorders

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## ABSTRACT

### BACKGROUND

Patient adherence to treatment is important for successful treatment and compliance. Non-adherence is a serious problem and major preventable cause of dermatological morbidity. The objective of this study was to identify patients with treatment non-adherence and associated factors among chronic dermatological conditions.

### MATERIALS AND METHODS

This was descriptive, cross-sectional study in 208 patients with chronic dermatological conditions attending dermatology OPD of National Medical College. Non-probability sampling technique was utilized for study. A preformed questionnaire form was given to the patients. Non-adherence was assessed using MMAS-8 and non-adherence was categorized accordingly.

### RESULTS

Out of 208 respondents, majority were male (58.65%). Most of them (64.42%) were Hindus. One fourth of them were illiterate and 90% had low income. Non-adherence among patients were found due to factors related to patient, drugs and physicians. More than half of them used drugs not prescribed by any dermatologist, took error dosages and mistake in timing. The contributing factors were in-affordability (73.08%), polypharmacy (74.52%), side effects (45.19%), inconvenience in application (75%), unavailability of dermatological health services (74.04%), excessive time taken (>4hrs) to reach for an appointment (48.12%), dissatisfaction with hospital services (25.96%). Similarly, doctor related factors were inaccessibility to doctor (14.42%), less times spent (42%), hostile attitude (13%), language barrier (49.04%) and incompetency (9.62%). The MMAS-8 score revealed the low adherence score.

### CONCLUSION

The study revealed multiple factors contributed for treatment nonadherence. Early identification of those factors could prevent non-adherence. A holistic approach close monitoring is required to deal with this issue and of the patient's self-treatment.

**Key Words:** Adherence; Compliance; Chronic dermatological disorders; Non-adherence; Non-compliance

### INTRODUCTION

Adherence to treatment occurs when patients actively participate in their treatment plans and take their treatments as recommended.<sup>1</sup> Good adherence is related with good outcome. Thus, non-adherence to treatment is associated with either treatment failure or relapse, which is a

major challenge to health professionals.<sup>2,3</sup> It is commonly seen in chronic illnesses including skin diseases such as acne, psoriasis, vitiligo, alopecia, eczema, onychomycosis etc. It is found to be associated with various risk factors like types of disease, treatment modalities, the physician-patient relationship and so on.<sup>4</sup> Besides, non-adherence is considered as a major cost burden on the healthcare system.<sup>5</sup> Thus, it is very important to take into account these factors so as to optimize management of dermatological disorders.

## OBJECTIVES

The objective of the study was to identify the patients and risk factors of treatment non-adherence in chronic dermatological disorders.

## MATERIALS AND METHODS

This was a cross-sectional, hospital-based study conducted at out-patient department of dermatology at National Medical College and Teaching Hospital, Birgunj for twelve months. Purposive sampling was utilized for study. Informed consent was obtained before starting research from all the respondents. Ethical approval was taken from Institutional review committee before commencing the study. A total of 208 patients having chronic dermatological conditions who were non-adherent to treatment were enrolled in the study on the basis of selection criteria.

Inclusion criteria included following parameters:

1. Age of patient- 18 years or above
2. Patients suffering from dermatological disorders for 3 months or more
3. Discontinuation of prescribed drug treatment
4. Treatment dropout
5. Errors in dosing and timing
6. Taking additional medication not prescribed by the physician
7. Self-medication

Exclusion Criteria were as follows

1. Patients suffering from disease since less than three months
2. Patient not willing to participate in the study

Data were collected based on a semi-structure questionnaire developed. The questionnaires were translated into Nepali and local language in order to simplify and make understandable to the subjects. Nepali and local language version questionnaires were used for establishing reliability by pre-testing the instrument on 20 subjects (i.e. approximately 10% of total sample) outside the teaching hospital, Birgunj in similar settings. Adherence to medications was assessed using the eight item Morisky Medication Adherence Scale (MMAS). According to the MMAS-8 score (range 0–8), adherence was defined as high (score 8), medium (score 6 to < 8) or low (score < 6).<sup>6</sup> Data were recorded and analyzed SPSS-22. The proportions and frequencies for categorical variables were calculated, while means and SDs were calculated for continuous variables.

## RESULTS

A total of 208 patients were evaluated with mean age was 32.21 years with 58.6% were male. Most of them, i.e. 82 (39.42%) were from the age of 18-30 years. The majority of respondents

i.e. 134 (64.42%) were Hindus. Regarding occupation, approximately one fourth of them were farmers and another one fourth were students. A considerable number of patients were from the background of business 30 (14.42%), service 38 (18.27%) and daily wages 28 (13.46%). Table No. 1 shows the socio-demographic data of the patients.

Table No. 1 Socio-demographic characteristics of the Respondents

Variables	Frequency	Percentage (%)
<b>Age, in years</b>		
18 - 30	82	39.42
30 – 40	64	30.76
40 – 50	44	21.15
>50	18	08.65
<b>Gender</b>		
Male	122	58.65
Female	86	41.34
<b>Religion</b>		
Hindu	134	64.42
Muslim	68	32.69
Christian	4	01.92
Buddhist	2	00.96
<b>Occupational Status</b>		
Agriculture	50	24.04
Business	30	14.42
Service	38	18.27
Daily wages	28	13.46
Student	50	24.04
Homemaker	12	05.77
<b>Educational Status</b>		
Illiterate	52	25.00
Literate	156	75.00
<b>Type of family</b>		
Nuclear	56	26.92
Joint	104	50.00
Extended	48	23.08
<b>Marital Status</b>		
Married	152	73.08
Unmarried	52	25.00
Widowed	4	01.92
Divorced	0	0
<b>Family income</b>		
Below NRs 3000	26	12.50
NRs. 3000-5000	60	28.84
NRs. 5000-10000	100	48.08
More than 10000	22	10.58

Table 2: Illness and Treatment Related Factors

Variables	Frequency	Percentage
<b>Duration of illness</b>		
< 6 months	37	17.79
6-12 months	82	39.42
1-3year	41	19.71
3-5 years	26	12.50
> 5years	22	10.58
<b>Treatment taken from other than skin specialist</b>		
Yes	136	65.38
No	72	34.62
<b>On yes response (n=136)</b>		
Other medical center or clinic	59	43.38
Chemist shop	40	29.41
Vaidhya	15	11.03

Maulana	22	16.18
<b>Affordability of treatment</b>		
Yes	56	26.92
No	152	73.08
<b>Availability of treatment</b>		
Easily available	104	50.00
Available with difficulty	80	38.46
Not available	24	11.54

Table 2 shows the patient and illness related factors associated with non-adherence in chronic dermatological conditions in which majority, 82 (39.42%) of the respondents had duration of illness of 6-12 months and 22 of them had illness from more than 5 years period. Table reflects that 136 (65.38%) had treatment from other than skin specialist in the past, other medical center or clinic. Majority of them (73.08%) expressed non-affordability of the treatment though availability of treatment of some kind or the other was present to most of the subjects

Table 3: Illness and Treatment Related Factors

Variables	Frequency	Percentage (%)
Experienced of unwanted side effect		
Yes	94	45.19
No	114	54.81
On Yes response(n=94 )		
Cutaneous	46	48.94
Gastrointestinal	27	28.72
Metabolic	4	04.26
Hematological	14	14.89
Others	3	03.19
Ever left medication thinking of being cured		
Yes	179	86.06
No	29	13.94
Stop medication after the initial distressing symptoms relieved		
Yes	163	78.37
No	45	21.63
Ever take error dosage		
Yes	84	40.38
No	124	59.62
Use of additional medication not prescribed by the doctor		
Yes	145	69.71
No	63	30.29
Mistake in timings of taking medicine		
Yes	138	66.35
No	70	33.65
Discontinued the medication or taken irregularly		
Yes	156	75.00
No	52	25.00
On Yes response(n=156)		
Occasionally, missed single day	94	60.26
Took "drug holidays"	49	31.41
Took several "drug holidays" during the course	13	08.33

Table 3 revealed that around 94 (45.19%) had experienced side effects of medication of which almost half of them (46) had cutaneous and 27 (approximately 29%) had gastrointestinal symptoms. Similarly, 14 had experienced hematological and a few experienced metabolic and

other side effects such as hypertension. Majority of the respondents, 179 (86.06%) had quit medication on one or more occasions under the impression of being cured. Similarly, 163 (78.37%) patients left the treatment as soon as the initial distressing symptoms were relieved. Almost, 40% of the patients had made error in dosing which they realized later. Approximately, 70% of the respondents had taken or were on some or the other additional medicines which was never formally prescribed to them. 138 (66.35%) patients had made mistake in timing of application or consumption of medicines. Irregular dosing was a very commonly observed phenomenon with 156(75 %) defaulters of which 94 had missed drug on a single day.

Table 4

Variables	Frequency	Percentage
Co-morbid illness		
Yes	26	12.50
No	182	87.50
On Yes response(n=26)		
Diabetes	12	46.15
Hypertension	7	26.92
Substance use	2	07.69
Other Dermatological illness	5	19.23
Any mental illness	0	0
Others	0	0

Regarding comorbid status, 26 respondents had one or the other co-morbid illness of which diabetes mellitus was the commonest co-morbidity followed by hypertension.

Table 5: Socio-cultural, Familial and Environmental Factors

Variables	Frequency	Percentage (%)
Role of family members, neighbors and relatives		
Yes	189	90.87
No	19	09.13
Any negative way towards treatment by others		
Yes	16	07.69
No	192	92.31
On yes response (N=16),		
Encourage for faith healing instead of drug therapy	6	37.50
Treat as curse of God	3	18.75
Treat patient as inferior	0	0
Drugs are habit forming	3	18.75
Declared non-treatable or non- curing	4	25.00
Healthcare available nearby your home		
Yes	54	25.96
No	154	74.04
Distance travel for treatment		
≤1 km	10	04.81
2-5 kms	45	21.63
6-10 kms	86	41.35
11-20 kms	62	29.81
> 20 kms	5	02.40

The above table reflected that a majority of them i.e. 189 (90.87%) understood the role of family in the course of treatment. Some of them (16) found negative response towards treatment from people around by different ways in the course of treatment, of them, encouragement towards faith healing being the commonest one. Approximately, about 3/4th of them had skin treatment health facility far from their home. Most of them (41.35%) had this facility 6-10km away from their residential area.

Table 6: Doctor Related Factors

Variables	Frequency	Percentage (%)
<b>Accessibility of doctor</b>		
Easily accessible	96	46.15
Accessible with difficulty	82	39.42
Not accessible	30	14.42
<b>Awareness given by doctor</b>		
Full awareness	72	34.62
Partial awareness	104	50.00
No awareness at all	32	15.38
<b>Doctor's attitude</b>		
Friendly	182	87.50
Unfriendly / Rejecting	22	10.58
Hostile	4	01.92
<b>Time provided to the patient</b>		
<2 minutes	6	02.88
2-5 minutes	82	39.42
5-10 minutes	80	38.46
>10 minutes	40	19.23
<b>Doctor's language understandable</b>		
Yes	46	22.12
No	102	49.04
Mixed language but tried to explain	60	28.85
<b>Doctor explain you how to apply the drug?</b>		
Yes	28	13.46
No	32	15.38
No, but the doctor asked someone else to explain	148	71.15
<b>Level of satisfaction with the competence of doctor</b>		
Fully satisfied	132	63.46
Partially satisfied	56	26.92
Not satisfied at all	20	09.62

Table 6 shows non-adherence associated with doctor related factors in which almost half of them (46.15%) had an easy accessibility of doctor and 14.42% had no accessibility. A majority (50%) got partial awareness regarding illness from doctor while a few 32(15.38%) of respondent did not received awareness at all. 182(87.5%) found doctor's attitude friendly while some (10.58%) of them found unfriendly and hostile (approximately 2%). Similarly, time given to majority patients 168(80.77%) by doctor during consultation was less than 10 minutes while only minimal percentage 40(19.23%) of them were given more than 10 minutes. Regarding the use of language during treatment by doctors, approximately half of respondents did not understand the language. Similarly, majority 148(71.15%) of respondents reported that doctor did not explain the way of application of drug personally on one to one basis. Regarding satisfaction with competence of doctor, majority 132(63.46%) were fully satisfied and some 20(9.62%) of them were not satisfied at all.

Table 7. Morisky Medication-Taking Adherence Scale-MMAS (8-item)

Variables	Frequency
<b>Sometimes forget to use medicine</b>	
Yes	194
No	14
<b>In past 2 weeks, forgot to use medicine any days</b>	
Yes	70
No	138
<b>Ever stopped using medicine without telling doctor due to feeling of worsening</b>	
Yes	118
No	90
<b>Forget to take medicine during travel or leave home</b>	
Yes	53
No	155
<b>Use of all medicines yesterday</b>	
Yes	192
No	16
<b>Stopped medicines due to control of symptoms</b>	
Yes	165
No	43
<b>Feel hassled about sticking to treatment plan</b>	
Yes	145
No	63
<b>Difficulty remembering to use all medicines</b>	
Never/rarely	18
Once in a while	74
Sometimes	83
Usually	31
All the time	02

Morisky Medication-Taking Adherence Scale-MMAS in above table explored that majority 194(93.27%) of respondents sometimes forgot to take medicine and 70(33.65%) had forgotten it at least once in last 2 weeks. 118(56.73%) had once or more stopped the drug on their own without telling the doctor. 155(74.52%) patients admitted that they forget to carry the medicine while they travel. A majority, 192(92.31%) had used all the medication on the previous day. A majority, 165(79.33%) of the patients had stopped the use of drugs on attaining the control of symptoms. 145(69.71%) patients felt difficulty in sticking to the treatment plan and only 18(8.65%) patients said that they never forget to use all the medicines. The MMAS-8 revealed low adherence since the adherence score revealed from above table fell within the score of 3-8.

### Discussion

Non-adherence is a common problem in variety of diseases. A low adherence rate has been reported in patients with chronic dermatoses such as atopic dermatitis, psoriasis, urticaria and acne; however, few comparative studies have been performed. In our study, approximately half of the patients with dermatological conditions were non-adherent. Similar finding was published in studies by Richards et al<sup>8</sup> and Ichiyama et al<sup>9</sup>. The issue seemed to be complex and multifactorial with major being demographic factors; patient and illness related factors; doctor related factors; treatment related factors; and socio-cultural, familial and environment-related factors.<sup>10</sup>

Demographic findings in our study showed that majority (39.42%) respondents were from the age of 18 to 30 years and majorities were males (58.65%). Female patients seemed more adhered to their treatment due to greater consciousness of their appearance. The findings were similar to some studies where it was found that younger patients, especially male had shown more non-adherence to dermatological treatment.<sup>5,11,12</sup> Our study revealed that most of the respondents were Hindus (64.42%) and Muslims (32.69%). This presentation would have been as greater populations of these faiths reside in this geographical area, Hindus being more than Muslims for the same reason.

Various researches in the past have revealed the association of education level and non-adherence. Lower educational level was a risk factor for non-adherence and it was found more among illiterate patients.<sup>13,14</sup> Our study had also shown similar result where one fourth of them were illiterate. In our study, we found that a majority (90%) of respondent had a family income of less than 10000 per month. Different past studies have established the correlation of poverty with treatment non-adherence.<sup>5,15</sup> As the patients need to take medication for a longer duration and if they belong to a poor financial background, they usually discontinue the treatment. Nonadherence is seen among patient with poor family support such as widowed and divorced population. Social and cultural belief has a strong impact on the course of treatment of any type of illnesses.<sup>16</sup> Regarding family structure, majority of respondents lived in joint and extended family. Living together with a family support is a protective factor for treatment adherence and living alone and poor social support is a further risk factor. A review on non-adherence among psoriatic patients revealed the inconsistency of socio-demographical and disease factors in predicting adherence.<sup>17</sup>

Prior to treatment from dermatologist, in our study, majorities (65%) received treatment from various people and places which would have been due to socio-cultural belief, lack of awareness about disease or lack of knowledge.

Approximately one fourth of them could afford the treatment cost and majority of them left medication due to cost factor. Studies have found that difficulties accessing health service is a risk factor for nonadherence.<sup>9</sup> We found that the treatment facility was either readily available or was available with difficulty for almost 89% respondents. Non-availability of treatment composed a very small percentage in our study. About 2/3rd of the patient in our study used more than one drug. Approximately 45% of respondents of our study experienced side effects of medication. The occurrence of side effects and negative attitude towards the medication ultimately increases risk of non-adherence in more than half of the cases. Majority of the patients were uncomfortable in taking and/or applying medication in addition to unwanted side effects.

Comorbidity is common in chronic dermatological conditions which increases the likelihood of discontinuation of medication. In our study, 26 respondents had comorbid illness other than chronic dermatological conditions. Many dermatological disorders have different co-morbid illnesses and these also lead to psychological distress and non-adherence.<sup>18,19</sup>

Approximately 96% of the respondents believed having a dermatological disorder and about 80% thought this to be treatable. In our study, we found that approximately 93% patients intended to complete the treatment. Family members' knowledge and belief about illness is also crucial in determining non-adherence.

Regarding access to dermatological health facility, majority had no access nearby home, and approximately 73% had to travel more than 5 kilometers for more than 2 hours using different means of transportation especially cycle and public transport. Studies have suggested that increased healthcare cost, unavailability of medication and difficult access increased the rate of non-adherence and relapse. In our study, we found the role of faith healer and social stigma to a negligible extent (2-4%). Many past studies revealed forgetfulness as the most common factor associated with non-adherence.<sup>4,20</sup>

Past studies examining patient satisfaction with care and therapy reported a positive association with adherence. Low satisfaction of patients in our study was reflected by difficult accessibility to skin specialist for more than half of them and majority of them did not receive full awareness and adequate consultation time during their visit. Un-cooperativeness, unavailability or hostility attitude of doctor may lead to precipitation of nonadherence. Increase psychological distress and low patient satisfaction during treatment were associated with lower levels of adherence. Approximately 11% respondents found the treating doctors' attitude unfriendly, uncooperative and/or hostile. Trust in a physician is the most important factor in adherence to medication and vice-versa.<sup>21</sup>

The MMAS-8 revealed the low adherence since the adherence score revealed from above table fell under 3-8 score. Moreover, there are only 8 categories mentioned on the MMAS-8 and these are not the only fixed categories or factors that determine non-adherence. There are numerous factors associated with non-adherence such as social, familial, cultural, environmental, illness related, patient related etc. which are excluded by this scale.<sup>5,6</sup>

## CONCLUSION

The study nonadherence is common and various factors contribute to it. No isolated single or definite factor was responsible for treatment non-adherence. Identification and prevention of certain factors at the earliest could prevent individuals vulnerable to non-adherence. A holistic approach is required to deal with this issue and the focus should be not only on treatment initiation, but also on close monitoring of the patient's self-treatment. Further analyses of disease-specific adherence are warranted to elucidate the disease-specific factors that are associated with it.

## LIMITATION

Some of the limitation of studies were the length of the questionnaire, individual factors associated with each dermatological disease as separate entities.

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