

Psoriasis Disability Index in Psoriasis Patients in a Tertiary Care Hospital: A Cross Sectional Study

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Abstract: ***Introduction:** Psoriasis is a chronic inflammatory, hyperproliferative skin disease linked with social stigmatization, pain, discomfort, physical disability and psychological distress. It is a disease with profound impact on the psychological and social aspect of the patient, particularly because of its visibility. **Objectives:** 1. To estimate the level of handicap experienced by patients with psoriasis in the domains of daily activities, their work or education, personal relations, leisure activities, treatment. 2. To assess the disabilities and formulate better treatment modalities to improve the quality of life of the patients with psoriasis. **Methodology:** A total of 63 patients fulfilling the inclusion criteria were included in the study. A cross-sectional study was conducted in the outpatient unit of Department of Dermatology from 1st July 2022 to 31st August 2022. The socio-demographic data and Psoriasis Disability Index (PDI) of the patients were recorded using a standard questionnaire and their final score was calculated to assess the effect of disease on patient's life. **Results:** Mean age of the patients was 37.07 years with 36.5% in the age group of 19-30years. 63.5% were females and 36.5% were males. Most of the patients had lesions in their knees (47.6 %) and the least in their armpits (1.6%). Seasonal variations of the lesions were present in 84.1% patients. 65% of the patients feel that psoriasis has not interfered with their work. Counselling and lifestyle modification will help DLQI improve in psoriasis patients. DLQI will help to counsel diet and exercise and help patients improve.*

Keywords: Psoriasis, Psoriasis Disability Index, DLQI, quality of life, Psoriasis area severity index

1. Introduction

Psoriasis is a chronic inflammatory, hyperproliferative skin disease. It is characterized by well defined, erythematous scaly plaques, particularly affecting extensor surfaces, scalp and nails, and usually follows a relapsing and remitting course¹. Psoriasis is a serious condition strongly affecting the way a person sees himself and the way he is seen by others. It is linked with social stigmatization, pain, discomfort, physical disability and psychological distress². Psoriasis generally does not affect survival; it certainly has a number of major negative effects on patients, demonstrable by the significant detriment to quality of life³. It is a disease with profound impact on the psychological and social aspect of the patient, particularly because of its visibility⁴.

There is a substantial economic burden of psoriatic disease with short term disability and annual work absenteeism⁵. Patients with psoriasis feel stigmatised by the condition⁶. Patients with psoriasis experience a range of shortcomings which in turn affects their livelihood and quality of leading a holistic life, it is the improvement in quality of life that patients and physicians rely upon when selecting treatment. To address the same, a clear understanding of the various disabilities and shortcomings of the patient need to be assessed. Furthermore, we still must highlight the psychosocial aspects of this chronic skin disease and divert some part of our resources and energies in minimizing the

emotional, psychological and physical handicap associated with psoriasis.^{7,8}

The Psoriasis Disability Index (PDI) was developed as a tool for measurement of the impact of psoriasis in the daily activities of the patients with psoriasis. The PDI consists of a series of questions related to daily activities, work or school, personal relationships, leisure and treatment. All of the questions relate to the last 4 weeks.⁹

Using PDI has helped dermatologists measure the negative effects that psoriasis has on a patient's life particularly the psycho-social aspects. It determines how much of impairment psoriasis had on day-to-day activities of patients, the impact on work and person to person contact and the problems that the patients face in their relationships. The impact on their leisure and recreational activities is also established. A thorough search on electronic data revealed that to date, very limited study has been conducted in India which highlights this issue. This study was therefore conducted using Psoriasis Disability Index to assess the quality of life of a patient suffering from psoriasis being treated at a tertiary health care hospital.

Research Question: What are the various functional lifestyle disabilities faced by the patients of psoriasis in southern India.

Volume 12 Issue 7, July 2023

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Primary Objective:

To estimate the level of handicap experienced by patients with psoriasis in the domains of daily activities, their work or education, personal relations, leisure activities and treatment.

Secondary Objective:

To assess the disabilities and formulate better treatment modalities to improve the quality of life of the patients with psoriasis.

2. Literature Survey

Psoriasis is a serious condition strongly affecting the way a person sees himself and the way he is seen by others.³ Psoriasis affects both sexes equally. Although the definition of psoriasis as “a common, chronic, disfiguring, inflammatory condition of the skin”- is focused to skin only but its effects run more than just skin deep.¹⁰

Psoriasis ravages the quality of life (QOL) of afflicted individuals.⁴ Often, it becomes a lifelong burden for the patient.¹¹ An important factor for favorable treatment outcome in psoriasis is the improvement of overall psychosocial morbidity associated with the disease.¹² Thus assessment by a health professional of the extent of apparent disease in terms of the clinical severity alone may not suffice, and a more holistic approach to the quality of life is mandatory.¹³ Quantification of the impact of psoriasis on the QOL, along with clinical severity assessment, as has been demonstrated in various studies, could provide a measure of the clinical efficacy of the dermatological therapies;^{14,15} very few Indian studies have looked into the psychological aspects of this chronic disfiguring disease. Several types of measurement tools for QoL scales are available, the most common being self-administered questionnaires. Questionnaires like psoriasis disability index (PDI), a 36-item short form health survey questionnaire (HSQ-SF 36), etc., were developed to assess the QoL. PDI questionnaire is designed for use in adults. Two methods are used to answer the questionnaire: Visual analogue scale and tick box method. In visual analogue scale, each question is answered on a graded scale of 0–6. In tick box method, each question is answered on a series of four answers – not at all, little, a lot and very much. The PDI is calculated by summing the score of each of the 15 questions. The higher the score, the more QoL is impaired. PDI can also be analyzed under five subsets, namely, daily activities, work, personal relationship, leisure and treatment. The PDI is also effective in demonstrating the effects of interventions, both of treatments and in health service research.¹⁶

3. Methods / Approach

This cross-sectional study was conducted in the outpatient unit of Department of Dermatology, BGS Global Institute of Medical Sciences for a period of 2 months from 1st July 2022 to 31st August 2022. All patients of either gender and older than 18 years, with clinically diagnosed psoriasis of any severity were included in this study using convenience

sampling method. Patients were informed about the parameters of the study and written consent was taken.

Inclusion criteria: All patients of psoriasis attending the outpatient department of Dermatology at BGS GIMS during the study period and volunteered to participate in the study. With duration of the disease of at least 6 months
Exclusion criteria: Patient of age above 70 years or having any comorbid chronic skin condition were excluded from the study

The study was approved by the Hospital Ethics Committee. History of the patient was taken and clinical examination was done to rule out any other concomitant chronic skin or systemic disease. Patients younger than 18 years, patients unwilling to participate in this study or patients having any other skin or systemic disease were not included in this study. The demographic data of the patients was recorded on a specially designed patient's pro forma, which included name, age, gender, religion, total income of family per month, socioeconomic class of the patient along with other details such as distribution, type of psoriasis, number of lesions, seasonal variation, morphology, duration of the disease and the duration of the treatment, in addition to the Psoriasis Disability Index (PDI). PDI was recorded by the researcher herself from the patients on a standard questionnaire. This questionnaire comprises 15 questions in which patients were asked questions related to daily activities, work or school, personal relationships, leisure and treatment. All of the questions relate to the last 4 weeks. The answers to the 15 questions included in the PDI were as follows; ‘very much’ (scored 3), ‘a lot’ (2), ‘a little’ (1) and ‘not at all’ (0). If a question is left unanswered, the score = 0. The Psoriasis Disability Index is calculated by summing the score of each of the 15 questions, resulting in a maximum of 45 and a minimum of 0. The higher the score, the more quality of life is impaired. The Psoriasis Disability Index can also be expressed as a percentage of the maximum possible score of 45. The PDI can be analysed under 5 headings:

- 1) Daily Activities (question number 1-5): maximum score of 15
- 2) Work or school (question number 6-8): maximum score of 9
- 3) Personal relationships (question number 9 &10) maximum score of 6
- 4) Leisure (question number 11-14): maximum score of 12
- 5) Treatment (question number 15): maximum score of 3

All the Data collected was compiled using Microsoft excel and analysed using SPSS 20. The results are presented in descriptive statistics and graphs. Based on the suitability of data associated factors was tested statistically using a chi-square test.

4. Results / Discussion

A total of 63 patients fulfilling the inclusion criteria were included in the study.

Table 1: Socio-demographic profile of the study subjects

Age-Group (Years)	n (%)
19-30	23 (36.5)
31-40	20 (31.7)
41-50	10 (15.9)
51-60	6 (9.5)
61-70	3 (4.8)
71-80	1 (1.6)
Gender	
Female	40 (63.5)
Male	23 (36.5)
Hindu	
Hindu	56 (88.9)
Muslim	4 (6.3)
Christian	3 (4.8)
Socio-Economic Status	
Upper Class	1 (1.6)
Upper Middle Class	35 (55.6)
Upper Lower Class	8 (12.7)
Lower Middle Class	19 (30.2)

Mean age of the patients was 37.07 years with minimum age of 19 years and maximum of 73 years. 23 patients (36.5%) were in the age group of 19-30 years, 20 patients (31.7%) in the age group of 31-40 years, 10 patients (15.9%) in the age group of 41-50, 6 patients (9.5%) in the age group of 51-60 years, 3 patients (4.8%) in the age group of 61-70 years and 1 patient (1.6%) in the age group of 71-80 years.

Forty patients were females (63.5%) and 23 were males (36.5%).

Out of the 63 patients who participated in the study, 56 patients (88.9%) belonged to Hindu religion, 4 patients

(6.3%) belonged to Muslim religion and 3 patients (4.8%) belonged to Christian religion.

1 patient (1.6%) belonged to Upper class, 35 patients (55.6%) belonged to Upper Middle Class, 8 patients (12.7%) belonged to Upper Lower Class and 19 patients (30.2%) belonged to Lower Middleclass socio- economic status respectively.

Frequencies of the distribution of lesions in various parts of the body are summarized in table-2.

Table 2: Disease pattern of the study subjects

Distribution	n (%)
Knees	30 (47.6)
Elbows	27 (42.9)
Palms	10 (15.9)
Abdomen	9 (14.3)
Back	8 (12.7)
Ankles	7 (11.1)
Scalp	7 (11.1)
Plantar surface	7 (11.1)
Groin	4 (6.3)
Nails	2 (3.2)
Armpit	1 (1.6)
Type of psoriasis	
Plaque psoriasis	55 (87.3)
Inverse psoriasis	5 (7.9)
Erythrodermic psoriasis	1 (1.6)
Nail psoriasis	1 (1.6)
Guttate psoriasis	1 (1.6)
Seasonal variation	
No	10 (15.9)
Yes	53 (84.1)
If seasonal variation present, which season is it seen in?	
Monsoon	39 (73.6)
Summer	6 (11.3)
Winter	8 (15.1)
Morphology	
Erythematous lesion	9 (14.3)
Hyperpigmented patches	1 (1.6)
Scaly lesions	53 (84.1)

Most of the patients (n=38, 47.6 %) had lesions in their knees and the least (n=1, 1.6%) in their armpits.

Most common type of psoriasis was found to be Plaque Psoriasis (n=55, 87.3%) and the least common type was found to be Guttate Psoriasis (n=1, 1.6%), with the most common morphology being Scaly lesions (n=53, 84.1%).

Seasonal variations of the lesions were found to be present in 53 patients (84.1%) and the most common season it was found to be present was in the Monsoon season (n=39, 73.6%).

The duration of the disease, history of previous treatment and the duration of treatment have been represented in Table 3.

Table 3: Duration of Disease and treatment pattern of the study subjects

Duration of Disease	n (%)
< 6 Months	14 (22.2)
7-12 Months	18 (28.6)
1-5 Years	24 (38.1)
≥ 10 Years	7 (11.1)
Previous Treatment	
Yes	59 (93.7)
No	4 (6.3)
Duration of Treatment	
Newly Detected	4 (6.3)
Intermediate (on & off)	3 (4.8)
<1 year	40 (63.5)
1-5 Years	13 (20.6)
10-20 Years	1 (1.6)
6-10 Years	2 (3.2)

24 patients (38.1 %) have had psoriasis for a period of 1-5 years, 18 patients (28.6%) for a duration of 7-12 months, 14 patients (22.2%) for a period of <6months and 7 patients (11.1%) for a period of > 10 years. 59 patients (93.7%) have been on treatment, out of which 40 patients have been on treatment for a period of <1year, 13 patients (20.6%) for a period of 1-5years, 2 patients (3.2%) for a period of 6-10 years, 1 patient (1.6%) for a period of 10-20 years and 3 patients (4.8%) who were on intermediate treatment. 4 patients (6.3%) were newly detected patients.

(6.34%) have a score between 20-25, 1 (1.6%) has a score between 25-30, 1 (1.6%) has a score between 30-35.

The psoriasis disability index of the study subjects are summarized in Table 4.

17 patients (26.98%) have a score between 1-5, 17 (26.98%) have a score between 5-10, 16 (25.39%) have a score between 10-15, 7 (11.11%) have a score between 15-20, 4

Table 4: Psoriasis Disability index of the study subjects

Psoriasis Disability index	A little	A lot	Not at all	Very much
How much has your psoriasis interfered with you carrying out work around the house or garden?	18 (28.6)	2 (3.2)	41 (65)	2 (3.2)
How often have you worn different types or colours of clothes because of your psoriasis?	18 (28.6)	17 (27)	25 (39.7)	3 (4.8)
How much more have you had to change or wash your clothes?	28 (44.5)	6 (9.5)	29 (46)	--
How much of a problem has your psoriasis been at the hairdressers?	4 (6.35)	4 (6.35)	51 (80.95)	4 (6.35)
How much has your psoriasis resulted in you having to take more baths than usual?	29 (46)	8 (12.7)	25 (39.7)	1 (1.6)
How much has your psoriasis made you lose time off work or school over the last four weeks?	6 (9.5)	55 (87.3)	2 (3.2)	--
How much has your psoriasis prevented you from doing things at work or school over the last four weeks?	12 (19)	1 (1.6)	49 (77.8)	1 (1.6)
Has your career been affected by your psoriasis? e.g. promotion refused, lost a job, asked to change a job.	17 (27)	6 (9.5)	40 (63.5)	--
How much has your psoriasis stopped you carrying out your normal daily activities over the last four weeks?	17 (27)	2 (3.2)	43 (68.3)	1 (1.6)
How much has your psoriasis altered the way in which you carry out your normal daily activities over the last four weeks?	19 (30.2)	1 (1.6)	41 (65.1)	2 (3.2)
Has your career been affected by your psoriasis? e.g., promotion refused, lost a job, asked to change a job.	20 (31.7)	4 (6.3)	36 (57.1)	3 (4.8)
Has your psoriasis resulted in sexual difficulties over the last four weeks?	29 (46)	3 (4.8)	28 (44.4)	3 (4.8)
Has your psoriasis created problems with your partner or any of your close friends or relatives?	21 (33.3)	14 (22.2)	24 (38.1)	4 (6.3)
How much has your psoriasis stopped you going out socially or to any special functions?	18 (28.6)	17 (27)	21 (33.3)	7 (11.1)
Is your psoriasis making it difficult for you to do any sport?	14 (22.2)	2 (3.2)	46 (73)	1 (1.6)
Have you been unable to use, criticized or stopped from using communal bathing or changing facilities?	27 (42.9)	3 (4.8)	32 (50.8)	1 (1.6)
Has your psoriasis resulted in you smoking or drinking alcohol more than you would do normally?	24 (38.1)	13 (20.6)	22 (34.9)	4 (6.3)
To what extent has your psoriasis or treatment made your home messy or untidy?	31 (49.2)	2 (3.2)	27 (42.9)	3 (4.8)

Majority (n=41, 65%) of the patients feel that psoriasis has not interfered with them carrying out work around the house or garden and 3.2% of the study population feel that the condition has interfered with their work very much and 28.6% of the patients have experienced a little interference.

39.7 % of the patients have not felt the need to wear a different shade of colour of their clothes due to their condition, however 55.6% (28.6% <a little> + 27% <a lot>) of the patients have experienced some need in wearing a different shade owing to their condition.

54% (44.5% <a little> + 9.5% <a lot>) of the population has felt some need to change or wash their clothes due to their condition, when compared to 46% who have experienced no need at all.

Around 51% of the patients have faced no problem at all at the hairdressers. 12.7 % have faced some problem (a little: n=4, 6.35% & a lot: n=4, 6.35%) and 6.35% have faced very much of a problem with the hair dressers.

58.7% of the patients have found some (a little: n= 29, 46% & a lot: n=8, 12.7%) need in taking more baths than usual. 39.7% Of patients have found no need at all to take more baths than usual.

87.3% of the patients feel that their condition has made them lose time off work or school over the last 4 weeks a lot. 9.5% of the patients feel that they have lost a little time off work and 3.2 % have no such experience.

77.8% of the patients don't feel, 19% have felt a little, 1.6 % have felt a lot and 1.6% have felt very much that their condition has prevented them from doing things at work or school over the last 4 weeks.

63.5% have faced no problem, 27% have faced a little, 9.5% have faced a lot of affect of their condition on their career.

68.3% have faced no problem, 27% have faced a little, 3.2% have faced a lot and 1.6% have faced very much of a problem in having stopped them from carrying out their daily activities over the past 4 weeks.

65.1% have faced no problem, 30.2% a little, 1.6% a lot and 3.2% very much of a problem in their condition having altered the way in which they carry out their normal daily activities over the last four weeks.

50.8% of the patients (a little: n= 46% & a lot: n=4.8%) have experienced some, 4.8% have experienced very much, 44.4% of the patients have experience no sexual difficulties in the last 4 weeks.

55.5 % of the patients have reported some (a little: n= 33.3% & a lot: n= 22.2%), 6.3 % have reported very much and 38.1% have reported no problem with their partners or any of their close friends or relatives.

55.6% of the patients have felt some (a little: n= 18, 28.6% & a lot: n= 17, 27%), 33.3% have felt nothing at all, 11. 1%

have felt very much that their condition has stopped them from going out socially or to any special functions.

73% of patients face no, 25.4% face some (a little: n= 14, 22.2% & a lot: n= 2, 3.2%), and 1.6% face very much difficulty in doing any sport.

50.8% have not felt, 47.7% have felt some (a little: n= 27, 42.9% & a lot: n= 3, 4.8%) and 1.16% have felt very much of criticism or were stopped from using communal bathing or changing facility.

58.7% have resorted into some (a little: n= 24, 38.1% & a lot: n= 13, 20.6%), 34.9% have resorted to none and 6.3 % have resorted very much into smoking or drinking alcohol more than they would do normally.

52.4 % feel that to some extent (a little: n= 31, 49.2% & a lot: n= 2, 3.2%), 42.9% have felt nothing at all and 4.8% have felt that to a very much extent their condition or treatment have made their home messy or untidy.

Prevalence of psoriasis varies in different parts of the world. According to published reports, prevalence in different populations varies from 0% to 11.8%.¹⁷ In a study from tertiary health care center from North India, psoriasis patients accounted for 2.3% of the total dermatology outpatients.¹⁸ It has profound impact on the psychological and social aspect of the patient, particularly because of its visibility. Various measures have been used to assess QoL in psoriasis patients. These measures may be categorized as psoriasis-specific, skin specific, generic QoL measures, and "mixed" measures. Skin-specific measures like Questionnaire on Experience with Skin Complaints (QES) and Dermatology Life Quality Index (DLQI) or Generic QoL measures like Short Form 36 (SF-36), Subjective Well Being Scale (SWLS) facilitate comparisons across various diseases. Whereas psoriasis specific measures like PDI and PLSI are the most sensitive tools to detect psychosocial morbidity in patients.³ Psoriasis of hands and feet may cause difficulty in performing daily chores like picking things up, sewing, etc. Walking may become painful due to fissures on the thick, cracked soles. Having psoriatic skin lesions, especially on the exposed parts of the body, compels the patient to make necessary changes in their choice of clothing to conceal the lesions.

In the present study 36.5% were in the age group of 19-30 years which was similar compared to a study conducted by Pakran J²⁰, a younger age onset was associated with greater physical disability.

63.5% were females and 36.5% were males in the present study compared to a study conducted by Pakran J²⁰, males were more significantly affected at workplace than females²⁰, male predilection was observed in a study conducted by Joseph DM²¹ and Hagg et al¹¹, Gupta and Gupta²² also showed that men report more occupational impairment but Koo et al,²³ found that women reported more severe disease than man. Certain other studies that showed an equal gender distribution.^[2,24,25]

According to the different subsets of PDI, the QoL was most affected in daily activities - 31.8% in the present study

compared to 38.66% in a study conducted by Dalal A³ and 90.6% in a study conducted by Manjula VD.¹⁶ But in the study conducted in Kuwait,¹⁹ it was only 50%. Most of the other authors, Fortune et al,¹⁴ and Rakesh SV et al²⁶ too found, that out of the different components of PDI, daily activity was most affected.

Psoriasis has also a negative impact on work or occupation. Majority (65%) of the patients feel that psoriasis has not interfered with them carrying out work around the house or garden and 3.2% of the study population feel that the condition has interfered with their work very much and 28.6% of the patients have experienced a little interference. When compared to a study conducted by Manjula VD where QoL was affected in the work subscale in 84.4% of the patients.¹⁶

58.7% have resorted to smoking or drinking alcohol more than they would do normally. Increased alcohol consumption is recognized as a stress response and there has been much debate as to whether increased alcohol consumption is a cause or a consequence of psoriasis.

Some of the most persuasive indications of a link between stress and psoriasis come from patients themselves, with studies illustrating that 37% to 88% patients^{[27],[28],[29],[30],[31],[32],[2]} believe that stress or psychological distress is a factor influencing their condition. The question as to how stress modulates the physiologic homeostasis is complex and is likely to involve interactions between many cardiovascular, endocrine, and immunologic parameters.^[2] Hypocortisolism may be an important feature of stress-responsive psoriasis.^{[33],[34],[35]} Thus the "brain-skin axis" is a relatively new concept connecting stress and psoriasis. An interesting study by Schmidt-Ott and colleagues^[34] suggest that stress induces changes in the number of cytotoxic T lymphocytes, and this may be associated with exacerbation of psoriasis.

57.2 % felt that their condition or treatment have made their home messy or untidy compared to 68.75% respondents in a study conducted by Manjula VD¹⁶ and 4% in a study conducted by Pakran J²⁰. The reason for this could be that topical treatments in the form of coal tar is much better tolerated psychologically in our patients since indigenous practices such as oil massage are considered as healthy and beneficial.

In the personal relations, relation with partner or close relatives and sexual life were assessed. 55.6% of the patients have experienced some sort of sexual difficulties in the last 4 weeks compared to a study conducted by Joseph DM (44%)²¹ and Krueger et al.^[36], 68.75% in a study conducted by Manjula VD¹⁶, 33% in a study conducted by Al-Mazeedi et al.,^[19]. Another study by Gupta et al³⁷ showed that 40.8% were sexually affected. Psoriasis is well known to interfere with daily activities and sexual functions, generate psychological distress, and disrupt social relationships. These, in effect, create a vicious stress-psoriasis cycle which is responsible for the worsening of the condition in majority of patients.

90.5% of the patients feel that their condition has made them lose time off work or school over the last 4 weeks. The previous studies reported that patients with psoriasis had a higher financial burden due to absenteeism.^[6,36,38] and also in a study conducted by Joseph DM²¹. Therefore, QoL measures are being assigned increasing importance in the evaluation of health care outcomes.

5. Conclusion

Psoriasis patients suffer from psychological stress, stigmatization, embarrassment, disabilities at work, and financial problems in addition to the physical sufferings of the disease. In recent years, the conceptualization of stress in the context of psoriasis has developed to include not only significant life events but also daily hassles that occur largely as a result of living with a chronic disfiguring disease. We found in our psoriatic patients that as clinical severity of disease increases the impairment in QoL indices also increases. Assessment of psoriasis severity should include both clinical and psychological measures. Pharmacological intervention along with psychological support will bring about a better treatment outcome and help the patients to lead a better life. Thus, we conclude that QoL was affected in 31.8% of patients with alterations in their daily activities. There is no association between QoL and age or gender. Our findings stress the importance of a more holistic approach in the management of psoriasis.

6. Future Scope

Counselling and lifestyle modification will help DLQI improve in psoriasis patients. Stress is a trigger for Psoriasis exacerbation. Future scope to prevent association with metabolic syndrome DLQI will help to counsel diet and exercise and help patients improve. Anti diabetes and psychiatric medication triggers psoriasis. Hence preventing intake of medications by assessing DLQI and counselling patients will help future lifespan of patients with psoriasis.

7. Limitations

We did not follow up patients and see their improvement with blood investigation.

Small sample size and the study conducted in a referral hospital not reflecting the status in the community were the major limitations of our study.

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