

Stress and Quality of Life in Medically Ill Patients Admitted to a Hospital

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ABSTRACT

BACKGROUND

Persons suffering from medical illness suffer from a great deal of stress due to various factors such as the distress caused by the symptoms, restriction of movement and functioning, financial costs of treatment, worries about the prognosis and the future, and frequent hospitalizations with a loss of a sense of security and individuality leading to impaired QoL. This study aimed to examine the levels of, and the relationship between, perceived stress levels, and quality of life in patients hospitalized with medical illnesses. The study also attempted to understand the association of perceived stress, quality of life, various sociodemographic and clinical variables.

METHODS

This is a cross-sectional study conducted among 200 consenting patients in the age group 18-80 years, admitted in the General Medicine ward with various ailments. Sociodemographic profile and clinical profile were assessed using appropriate tools. Stress was measured using PSS and the QoL was assessed using the WHOQOL-BREF. Data collected was tabulated and statistical analysis was carried out using SPSS-21.

RESULTS

The mean age of the participants in the study was 45 years. Majority of the participants in the study were male, married, employed, belonging to Hindu nuclear family of lower middle and lower socioeconomic status and hailing from rural areas. Mean total Perceived Stress Scale (PSS-10) score was found to be 16.34 (S.D.= 5.89), with more than two-thirds of the patients reporting moderate to high levels of perceived stress. High levels of QoL was noted in 58.5 - 87% of the participants in the four domains of WHOQOL-BREF, with less than 10% of the participants reporting low quality of life in each of the domains. Lower socioeconomic status was found to be associated with higher perceived stress ($t=2.670$, $p<0.01$) and lower QoL. Lower age, fewer hospitalizations in the past year, and employment status was associated with better physical health quality of life. Perceived stress score was negatively correlated with all domains of quality of life ($p<0.001$).

CONCLUSIONS

Medical illness and hospitalization are associated with increased perceived stress levels. Perceived stress is significantly associated with a lower quality of life in all domains. This study emphasises the need for better integration of medical and psychiatric services to improve the overall health of the patient and further research in the field to understand the association between stress and quality of life better.

KEYWORDS

Stress, Quality of Life, Medically Ill

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DOI: 10.18410/jebmh/2020/138

Financial or Other Competing Interests:

None.

How to Cite This Article:

Ramya SL, Naik SP, Naik SC, et al. Stress

and quality of life in medically ill patients

admitted to a hospital. J. Evid. Based

Med. Healthc. 2020; 7(12), 628-636.

DOI: 10.18410/jebmh/2020/138

Submission 24-02-2020,

Peer Review 27-02-2020,

Acceptance 06-03-2020,

Published 23-03-2020.



BACKGROUND

Medical illness is one such state where, at times, the person may find it difficult to overcome the stress. Medical illnesses and stress have a bi-directional relationship. Medical illnesses usually lead to an increase in perceived stress of the person and the stress will, in turn, adversely affect the outcome of the illness in some conditions. Hospitalization can lead to a further increase in stress as it can be a very traumatic experience where people have to move their life setting from a familiar to an unfamiliar environment, with the loss of a sense of security and individuality.³

Quality of life has been defined as "an individuals' perceptions of their position in life in the context of the culture and value systems in which they live, and in relation to their goals, expectations, standards, concerns". It is a broad ranging concept affected in a complex way by the persons' physical health, psychological state, level of independence, social relationships and their relationship to salient features of their environment.⁴ Quality of life has been shown to be negatively affected in patients suffering from illnesses like diabetes mellitus, hypertension and tuberculosis and often found to be associated with higher levels of stress and psychological co-morbidities.^{5,6} Quality of life has also been linked to treatment adherence with poor treatment adherence often associated with poor quality of life.⁷

In this study, we aimed to examine the relationship between perceived stress levels and quality of life in patients hospitalized with medical illnesses. 200 patients admitted in the general medicine ward were approached and, after obtaining informed consent, perceived stress and quality of life were assessed using the Perceived Stress Scale (PSS-10) and World Health Organization Quality of Life scale – Bref version (WHOQOL-BREF). Sociodemographic and clinical features were also assessed and relationship between all the variables was studied.

Research Question

Do the stress levels affect the quality of life in hospitalized medically ill patients?

Hypothesis

Perceived stress levels affect the quality of life in medically ill hospitalized patients.

Numerous studies have been conducted, in India and abroad, to assess the levels of stress and the quality of life in patients suffering from various medical illnesses. Some of the studies have also tried to understand the association between the aforementioned factors. While some of the research focuses on the stress and quality of life in hospitalized patients, the rest of the studies targeted patients staying in the community and attending the hospitals as out-patients.

Prevalence Rates of Stress, Quality of Life and Treatment Adherence

Medical illnesses often lead to an increase in the stress levels of the patients due to various factors like the distress caused by the symptoms, restriction of movement and functioning, financial costs of treatment and worries about the prognosis and the future. Several studies have attempted to assess the level of stress in patients with different medical conditions and its impact on the symptoms and the prognosis.

In a study involving 181 patients suffering from Chronic Obstructive Lung Disease (COPD), mean perceived stress score assessed using the 14-item Perceived Stress Scale (PSS-14) was found to be 22.8, indicating moderate amount of stress. More shortness of breath and greater functional impairment were reported by those with higher stress scores.⁸

In another study comparing the perceived stress levels between women and men immediately and 12 months after acute myocardial infarction, both groups were found to have moderate levels of stress as assessed by the PSS-14. Perceived stress scores were found to decline over the twelve months period and women reported higher perceived stress compared to men both immediately and twelve months after myocardial infarction.⁹

Stress levels are often especially high in patients who suffer from chronic diseases with severe impairment of functioning. A study of 80 patients with chronic kidney disease undergoing dialysis in dialysis centres in South India revealed significantly high levels of stress.¹⁰ In patients with chronic kidney disease undergoing dialysis, it has been noted that financial difficulties, change in marital and social relationships, fear of disability and death and uncertainty about the future may worsen the stress and may also lead to comorbid mental health problems like depression and anxiety.¹¹

Hypertension is one of the most common chronic diseases to be often linked with stress. A transient elevation in blood pressure is often noted in stressful conditions. Some studies have attempted to study the association between stress and hypertension. Two studies done in India have reported significantly high levels of stress in patients with hypertension. While one study reported the prevalence of stress to be 84.3%, the other study reported 91.2% of the hypertensive patients to be having high level of stress.^{12,13}

A study analysed the data from the World health Survey (2002-2004), including 229,293 adults, and assessed the association of chronic medical conditions and multimorbidity with perceived stress among community-dwelling adults in 44 low and middle-income countries. Perceived stress was assessed along with eleven chronic conditions (angina, arthritis, asthma, chronic back pain, depression, and diabetes, edentulism, hearing problem, schizophrenia, tuberculosis and visual impairment). With the exception of edentulism, all the other chronic conditions were associated with higher mean perceived stress scores and the poorest individuals were deemed to be particularly vulnerable with regards to higher perceived stress.¹⁴

In addition to the prevailing medical illnesses, hospitalization further adds to the stress level due to movement to an unfamiliar environment and the financial burden of hospitalization accompanied by inability to earn income while admitted. In a study done in 700 hospitalized patients across various departments in central India, 72.9% of the patients reported stress post hospitalization, with women and patients hailing from urban areas reporting higher levels of stress. Some of the major factors for stress were found to be possible loss of body part or function and uncertainty regarding outcome of treatment.³

In a study on 80 hospitalized patients with COPD in Spain, stress was assessed on Hospital Stress rating scale (HSRS) and the stress score (166.4) was found to be lower than the mean score of the HSRS scale (220.5). The items related to the change of habits, loss of control, loss of autonomy and privacy were considered by the COPD patients to be the most stressful items during hospitalization.¹⁵

Quality of life (QOL) is an important multi-dimensional construct which is considered vital in assessing the burden of the disease and the impact on the functioning of an individual. Chronic diseases may impair the quality of life of the patients by limiting their capacity to interact and function in the day to day life, to earn a living and due to mounting medical costs.¹⁶ a vast amount of research has been conducted assessing the quality of life and its correlates in individuals suffering from various medical disorders.

A study from India assessing quality of life in 90 patients with tuberculosis found lower quality of life scores in all four domains of the WHOQOL-BREF compared to the control group.⁵ Similarly, in a health survey done in China in 1,224 adults, hypertension was found to be associated with a poorer health related quality of life with lower scores of physical functioning, role-physical, bodily pain, general health, vitality, and social function in individuals with hypertension compared to those without hypertension.¹⁷

In a study done on 200 patients with diabetes attending a rural primary care centre in Kerala, it was found that the percentage of people occupying more than 75th percentile in the WHOQOL-BREF domain scores corresponded to 7.1%, 16.2%, 17.25%, and 40.1% in the physical, psychological, social and environmental domains respectively, indicating an overall poor QOL in all domains.¹⁸

Similarly, in a cross-sectional study done on 75 patients undergoing haemodialysis for at least 3 months, significant impairment in quality of life scores in the physical, psychological and social domains of WHOQOL-BREF was noted.¹⁹

Association between Stress and Quality of Life

Numerous studies have studied the association between stress and quality of life in patients suffering from medical illnesses. Significant number of these studies have found a correlation between these factors.

In the earlier quoted study of 80 patients with chronic kidney disease undergoing dialysis, a significant negative correlation was found between the stress score (measured

by the PSS-14) and the social and environment domains of WHOQOL-BREF, indicating a worse quality of life in those domains amongst those with higher perceived stress levels.¹⁰ Similarly, in a study of 200 patients living with HIV / AIDS in Taiwan, higher stress levels were found to be associated with poorer quality of life in all four domains of WHOQOL-BREF, i.e. physical, psychological, social and environment.²⁰

Objectives

- **Primary**
 1. To study the levels of perceived stress and the quality of life and their association in medically ill hospitalized patients.
- **Secondary**
 1. To assess the perceived stress levels and the quality of life and their association with clinical variables like the type of medical illness, number of hospitalizations and treatment adherence.
 2. To study the association between perceived stress levels and quality of life and socio-demographic variables in medically ill hospitalized patients.

METHODS

This is a cross-sectional study conducted among 200 patients admitted in the general medicine wards over a period of 2 months.

Sample size was calculated using Cochran's formula $n_0 = z^2pq/e^2$, where $z=1.96$ for a confidence interval of 95%, p is the estimated prevalence in the population (50% or 0.5 in this study), q is $1-p$ (0.5), and e is the margin of error (0.05). So, $n_0 = 1,96^2 * 0.5 * 0.5 / (0.05)^2 = 384$.

Adjusted sample size $n = n_0N / (n_0 + N - 1)$, where N is the population size. A chart review revealed around 400 admissions in the general medicine wards in a span of 2 months over the previous 6 months.

So, adjusted sample size $n = 384 * 400 / (384 + 400 - 1) = 196$, which has been rounded up to 200.

Inclusion Criteria

1. Age: 18-80 years.
2. Those who gave written informed consent

Exclusion Criteria

1. Patients unwilling and uncooperative for the study
2. Patients suffering from dementia, delirium or any psychiatric conditions impairing their competence to understand the procedure and give consent.

Measures

Sociodemographic Profile Sheet.

Clinical Profile Sheet

Contained contain items like the number of medications, number of hospitalizations and surgeries in the past year.

Perceived Stress Scale (PSS-10)²¹

It is the most widely used psychological instrument for the measurement of the perception of stress. It is a 10-item scale with good reliability and validity and has been used in various population samples including people with chronic medical illnesses to assess the levels of perceived stress.

World Health Organization Quality of Life - Bref Version (WHOQOL-BREF)²²

It places emphasis on subjective evaluation of respondent's health and living conditions. Four domains of QOL are measured- physical health, psychological health, social relationship and environment. The scale has 26 items scored from 1 to 5 with total score range of 26-130. Its psychometric properties have been found to be comparable to those of the full version (WHOQOL-100). The scale has shown good discriminant validity, concurrent validity, internal consistency and test-retest reliability.

Approval for the study was sought from the Institutional review board (IRB) and the Institutional ethics committee (IEC). Patients admitted in the general medicine wards were approached and explained about the study and written informed consent was taken from 200 patients. Socio-demographic profile and clinical profile were assessed using appropriate tools. Stress was measured using the PSS and the quality of life was assessed using the WHOQOL-BREF. Data collected was tabulated and statistical analysis was carried out using SPSS-21.

Statistical Analysis

- Descriptive analysis was carried out using mean and standard deviation with range for continuous variables of the socio-demographic profile sheet, clinical profile sheet and other scales (mean total scores on the PSS-10, total scores on the domains of WHOQOL-BREF).
- Descriptive analysis was computed in terms of frequency and percentage for discrete variables of the socio-demographic profile sheet, clinical profile sheet and other scales.
- Unpaired t-test was used to compare the mean PSS-10 score and WHOQOL-BREF domain scores between gender, marital status, education, employment status and other discontinuous sociodemographic and clinical variables.
- Pearson's co-efficient and Spearman's rank correlation was used to correlate between the continuous variables of the socio-demographic profile sheet, clinical profile sheet and the scores of the PSS-10 and WHOQOL-BREF.

Ethical Considerations

- Written informed consent was taken from all participants in the study.
- The participants were advised that the consent can be withdrawn at any stage.
- No invasive procedures were carried out.
- Participants were told that unwillingness to participate in the study will not impact their treatment process in any way.

- No additional benefits were offered to take part in the study.
- Strict confidentiality was maintained.
- Participants who scored moderate to high scores on PSS were advised to seek a formal Psychiatric consultation.

Methodology

200 patients admitted in the general medicine ward, who met the inclusion criteria and gave written informed consent, were assessed using the Perceived Stress Scale (PSS-10) and World Health Organization Quality of Life scale – Bref version (WHOQOL-BREF). Sociodemographic and clinical features were also assessed and the relationship between all the aforementioned variables was studied.

RESULTS

The mean age of the participants in the study was 45 years. Majority of the participants in the study were male, married, employed, belonging to Hindu nuclear family of lower middle and lower socioeconomic status and hailing from rural areas. Presenting complaints at the time of admission were equally distributed among symptoms pertaining to various systems with symptoms of acute infectious illness being the most common presenting complaint (22%), with 34.5% of the participants having been hospitalized previously in the past year. Mean total Perceived Stress Scale (PSS-10) score was found to be 16.34(S.D.- 5.89), with categorization of the scores into low, moderate and high stress level groups showing 32%, 61.5% and 6.5% of the patients falling into the three groups respectively. The total domain scores of the domains of physical health, psychological health, social relationships and environment on the WHOQOL-BREF were found to be 25.68 (S.D.- 4.41), 22.39 (S.D.- 4.11), 11.78 (S.D.- 1.75) and 29.42 (S.D.- 4.67). High levels of quality of life was noted in 58.5%, 64%, 87% and 59% of the participants in the four domains of WHOQOL-BREF, with less than 10% of the participants reporting low quality of life in each of the domains. Lower socioeconomic status was found to be associated with higher perceived stress scores ($t=2.670$, $p<0.01$) and lower quality of life scores. Physical health domain score of WHOQOL-BREF had an inverse relationship with the age of the participant ($p<0.01$) and the number of hospitalizations in the past year ($p<0.05$). Physical health quality of life was also better in employed compared to unemployed ($p<0.05$). Perceived stress score was negatively correlated with all domains of quality of life ($p<0.001$). Perceived stress explained for 14% to 47% of the variance of different domains of quality of life as per WHOQOL-BREF.

Socio-Demographic Profile of Patients

As shown in Table-1, the mean age of patients was about 44.97 years (SD- 14.41; range 18 to 76). The number of males was more than twice the number of females. Nearly three-fourth of the 200 patients of the patients were married. Majority of the patients were employed. Mean years of education was about 6.73 years (SD - 4.35; range 0 to

15). Most of the patients belonged to families of middle socioeconomic class as per the modified Kuppaswamy Socio-Economic Scale. Majority of the patients were Hindus, hailing from rural localities and nuclear families. Slightly more than half of the patients were the heads of their families.

Sociodemographic Variables	Mean (S.D.)/N
Age	44.97(14.41) (range 18-76)
Education – number of years	6.73(4.35) (range 0-15)
Gender	
Male	139
Female	61
Current Marital Status	
Currently married	147
Currently unmarried	53
Education	
Below Matric	110
Matric and above	90
Current employment status	
Currently unemployed/retired/student/housewife	60
Currently employed	140
Socioeconomic Status	
Upper	1
Upper Middle	74
Lower Middle	71
Upper Lower	52
Lower	2
Socioeconomic Status	
Up to lower middle	125
Upper middle and higher	75
Religion	
Hindu	135
Muslim	62
Christian	3
Family type	
Nuclear	124
Non-nuclear	76
Locality	
Urban	60
Rural	140
Head of the family	
Yes/No	109/91

Table 1. Socio-Demographic Profile of Patients (N = 200)

Clinical Profile of Patients

As shown in Table-2, the patients presented with symptoms pertaining to different systems of the body. The highest number of patients presented with symptoms of acute infectious illness (fever of unknown origin, dengue, etc.). More than one-third of the patients had been hospitalized previously in the past year, with the mean number of hospitalizations being 0.97 (SD - 1.82; range 0-10). Nearly one-fifth of the patients had also undergone surgery sometime in the past year.

Clinical Variables	Mean (S.D.)/N
Presenting Complaint System	
Cardiovascular	23
Respiratory	22
Neurological	14
Gastrointestinal	26
Renal	17
Musculoskeletal	24
Acute Infectious	44
Endocrine	20
Haematological	10
Hospitalized in the Past Year	
Yes	69
No	131
Surgeries in the Past Year	
Yes	35
No	165
Number of Hospitalizations in the Past	0.97(1.82)(range 0-10)

Table 2. Clinical Profile of the Patients (N=200)

Perceived Stress Scale (PSS-10) and Quality of Life (WHOQOL-BREF) Scores

Perceived stress and quality of life were assessed using the PSS-10 and WHOQOL-BREF respectively. The mean total scores of PSS-10 and the domains of WHOQOL-BREF are shown in Table-3. The mean total score of PSS-10 was found to be 16.34 (5.89) (range 4-31), which lies in the moderate range of perceived stress. The mean total raw scores of the domains of WHOQOL-BREF, as shown below were found to be in the moderate to high range of quality of life.

	Mean (SD) (Range)
Perceived Stress Scale	
Total score	16.34(5.89) (range 4-31)
WHOQOL-BREF	
Overall quality of life and general health	7.39 (1.69) (range 2-10)
Physical health	25.68 (4.41) (range 11-35)
Psychological health	22.39 (4.11) (range 9-30)
Social relationships	11.78 (1.75) (range 6-15)
Environment	29.42 (4.67) (range 13-40)

Table 3. Perceived Stress Scale and WHOQOL-BREF Scores (N=200)

Table 4 shows the percentages of the individual items on PSS-10 chosen by the participants in the study.

	Never	Almost Never	Sometimes	Fairly Often	Quite Often
1. In the last month, how often have you been upset because of something that happened unexpectedly?	30	2.5	34.5	28	5
2. In the last month, how often have you felt that you were unable to control the important things in your life?	38	4	36	20	2
3. In the last month, how often have you felt nervous and "stressed"?	51	5.5	28.5	13.5	1.5
4. In the last month, how often have you felt confident about your ability to handle your personal problems?	4.5	3	19	68.5	5
5. In the last month, how often have you felt that things were going your way?	14.5	5	46	31.5	3
6. In the last month, how often have you found that you could not cope with all the things that you had to do?	16.5	14	50	17	2.5
7. In the last month, how often have you been able to control irritations in your life?	7.5	5	17.5	64	6
8. In the last month, how often have you felt that you were on top of things?	14	4.5	44	34.5	3
9. In the last month, how often have you been angered because of things that were outside your control?	16.5	8	40	32.5	3
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	29.5	7	36.5	21.5	5.5

Table 4. Frequency of Items on the PSS-10 Scale Displayed as Percentages (N=200)

Table 5 show the categorization of PSS-10 scores into the low, moderate and severe levels. As seen in the table, more than two-thirds of the participants reported moderate to high levels of perceived stress.

	Low (0-13)	Moderate (14-26)	High (27-40)
PSS-10 level of stress	32	61.5	6.5

Table 5. Categorization of PSS-10 Scores (N=200)

Similarly, table-6 shows the categorization of WHOQOL-BREF domain scores into low, moderate and high levels of quality of life. The raw scores were transformed to a 0-100 scale using the instructions given in the WHOQOL-BREF manual and the scores were then categorized. As seen below, majority of the participants were found to have a high quality of life in all the four domains.

WHOQOL-BREF levels	Low (0-45)	Moderate (46-65)	High (>65)
Physical Health	9.5	32	58.5
Psychological Health	9	27	64
Social Relationships	7.5	5.5	87
Environment	4.5	36.5	59

Table 6. Categorization of the WHOQOL-BREF Scores (N=200)

Sociodemographic and Clinical Correlates of Perceived Stress and Quality of Life

Statistically significant sociodemographic and clinical correlates of perceived stress and quality of life are noted below in table-7, table-8 and table-9. As seen in table-7, perceived stress (PSS-10 mean total score) was found to be greater in individuals belonging to socioeconomic status of lower middle and below (as per the modified Kuppuswamy classification) compared to the individuals from upper middle and upper socioeconomic status, and the difference was found to be statistically significant. No other significant association was found between perceived stress and other sociodemographic and clinical variables.

Variables	PSS-10 Total Score	
	Mean (S.D)	T Value / (P Value)
SES		
Up to lower middle	17.18(6.11)	2.670**
Upper middle and above	14.92(5.26)	(0.008)

Table 7. Association of Perceived Stress with Socioeconomic Status (N=200)

**Difference significant at the <0.01 level

In contrast to perceived stress, WHOQOL-BREF domains were associated with several sociodemographic and clinical factors. As seen in table-8 and table-9, greater age of the patient and more number of hospitalizations in the past year was associated with a poorer quality of life in the physical health domain of WHOQOL-BREF. Patients with current employment were also noted to have a statistically significant, greater quality of life in the physical health domain. Better quality of life was found to be associated with a higher socioeconomic status, with patients belonging to the lower middle and below socioeconomic status faring poorer. Finally, married individuals were found to have a statistically significant better quality of life in the social relationships domain of WHOQOL-BREF compared to unmarried individuals.

Variable	WHOQOL-BREF Physical Domain Correlation Coefficient (P Value)	WHOQOL-BREF Psychological Domain Correlation Coefficient (P Value)	WHOQOL-BREF Social Domain Correlation Coefficient (P Value)	WHOQOL-BREF Environment Domain Correlation Coefficient (P Value)
Age	-0.201 (0.004)**	-0.101 (0.155)	0.082 (0.251)	-0.099 (0.161)
Number of Hospitalizations	-0.180* σ (0.011)			

Table 8. Relationship between Quality of Life and Sociodemographic and Clinical Variables (Age, Number of Hospitalizations) (N=200)

σ Spearman's correlation
 * Correlation significant at the <0.05 level.
 ** Correlation significant at the <0.01 level.

Relationship between PSS-10 and WHOQOL-BREF Scores

Univariate analysis was used to study the association of perceived stress and quality of life using the Pearson's correlation coefficients. The results of the analysis are listed in table-10. The PSS-10 score was found to be negatively correlated with the total scores of all four domains of the WHOQOL-BREF and this correlation was found to be statistically significant. This implies that higher amounts of stress are often associated with poorer quality of life.

Variables	WHOQOL-BREF Physical Domain		WHOQOL-BREF Psychological Domain		WHOQOL-BREF Social Domain		WHOQOL-BREF Environment Domain	
	Mean (S.D.)	T Value / (P Value)	Mean (S.D.)	T Value / (P Value)	Mean (S.D.)	T Value / (P Value)	Mean (S.D.)	T Value / (P Value)
Employment								
Currently unemployed	24.12(4.97)	-3.080**						
Currently employed	26.35(3.98)	(0.003)						
SES								
Upper middle and above	26.48(4.16)	2.001*	23.52(4.05)	3.073**	12.09(1.61)	1.974*	31.01(4.67)	3.863***
Up to lower middle	25.20(4.51)	(0.047)	21.71(4.01)	(0.002)	11.59(1.81)	(0.05)	28.46(4.43)	(0.000)
Marital Status								
Married					11.95(1.83)	2.344		
Unmarried					11.30(1.42)	(0.02)*		
Hospitalizations in the past year								
Yes	24.46(5.26)	-2.604*						
No	26.32(3.76)	(0.011)						

Table 9. Relationship between Quality of Life and Sociodemographic and Clinical Variables (Employment, Marital Status, Socioeconomic Status, Hospitalization) (N=200)

* Difference significant at the <0.05 level, **Difference significant at the <0.01 level, ***Difference significant at the <0.001 level

Variable	PSS Total Score Correlation Coefficient (P Value)
Overall quality of life and general health	-0.565*** (<0.001)
Physical health	-0.619*** (<0.001)
Psychological health	-0.689*** (<0.001)
Social relationships	-0.387*** (<0.001)
Environment	-0.528*** (<0.001)
PSS total score	-----

Table 10. Relationship between Perceived Stress and Quality of Life

*Correlation significant at the <0.05 level,
 **Correlation significant at the <0.01 level,
 ***Correlation significant at the <0.001 level

Perceived Stress as a Predictor of Quality of Life

Regression analysis was run to explain the extent to which the perceived stress explained the variance in quality of life and the treatment adherence. As seen in table-11, perceived stress explained for 14% to 47% of the variance of different domains of quality of life as per WHOQOL-BREF, with the social relationship domain being the least and psychological health being the highest.

Dependent Variables	R	R Square	Adjusted R Square	Std. Error of the Estimate
WHOQOL-BREF Overall quality of life and general health				
Perceived stress score (predictor)	.565	.319	.316	1.40
WHOQOLBREF-Physical domain				
Perceived stress score (predictor)	.619	.383	.379	3.48
WHOQOLBREF-Psychological domain				
Perceived stress score (predictor)	.689	.475	.472	2.99
WHOQOLBREF-Social domain				
Perceived stress score (predictor)	.387	.150	.145	1.62
WHOQOLBREF-Environment domain				
Perceived stress score (predictor)	.528	.279	.275	3.98

Table 11. Regression Analysis Showing the Ability of Perceived Stress to Predict the Quality of Life and Treatment Adherence (Enter Method) (N=200)

DISCUSSION

Stress is a universal phenomenon which is often experienced in day to day life. In milder amounts, it can drive the person to achieve his goals and be beneficial, provided it is acknowledged and there is no imbalance in the person’s equilibrium. But higher amounts of stress may often lead to disturbance in day to day functioning and, if not effectively managed, may also lead to development of mental health problems like depression, anxiety, etc. Coping mechanisms usually help the person to manage the stress and return to the state of equilibrium. But major and continuous stressors like medical illnesses put a significant strain on the person’s coping resources and the person may be unable to cope with the stress, eventually leading to worsening of the overall condition of the patient. Medical illnesses and stress have a bi-directional relationship, with one significantly affecting the other. Morbidity due to medical illness often leads to restriction of movements, loss of autonomy, inability to work, hospitalization, increased financial burden which worsen the stress. In addition, the medical illness makes it difficult for the person to engage in routine activities which

serve as coping mechanisms, thus further worsening the stress. This is especially significant when a person is hospitalized which entails loss of autonomy, security, privacy and additional financial burden on the person which greatly adds to the existing stress level. Stress, in turn, especially in moderate to high levels, has been shown to worsen the morbidity of medical illness. Stress has also been shown to significantly impact the quality of life of the medically ill persons and lead to greater incidence of psychological comorbidities. Stress and quality of life have also been shown to have an impact on adherence to treatment.

In this study, we examined the levels of perceived stress and quality of life in patients admitted to a general medicine ward with varying ailments. We also attempted to examine the association between the aforementioned factors, along with their association to sociodemographic and clinical variables.

The total number of the participants in our study was 200. The mean age of the patient population in our study was found to be 45 years, with the youngest being about 18 years of age and the oldest 76 years of age. The mean number of years of education was 6.73(4.35) (range 0-15), which indicates that the average individual in our study only studied up to middle school. Less than half of the population completed 10th STD / matriculation. Majority of the study population were male, married, employed, belonging to a Hindu nuclear family and hailing from a rural region. About 62.5% of the study population belonged to the lower middle and lower socioeconomic strata as per the modified Kuppuswamy scale. More than half of the study population were the heads of their families. These demographic characteristics reflect the largely less educated, village-based and less well-to-do nature of the people who visit our hospital.

The patients were admitted with presenting complaints pertaining to various systems. While many of them had been suffering from long-standing illnesses for more than a few months, the largest group of 44 patients presented with symptoms of acute infectious diseases, with the least number of patients (n=10) presenting with haematological conditions like anaemia, idiopathic thrombocytopenic purpura, etc. More than one-third of the patients had been hospitalized previously in the past year once or multiple times. These clinical characteristics represent the usual distribution of patients who frequent our hospital throughout the year.

The mean total Perceived Stress Scale (PSS-10) score was found to be 16.34(5.89) (range 4-31) with categorization of the scores into low, moderate and high stress level groups showing 32%, 61.5% and 6.5% of the patients falling into the three groups respectively. This is similar to some of the previous studies done on perceived stress using the PSS-14 scale.^{8,9} Perceived stress was found to be more in patients belonging to lower socioeconomic status, indicating a lack of financial resources increases the stress associated with medical illness and hospitalization.

The total domain scores of the domains of physical health, psychological health, social relationships and

environment on the WHOQOL-BREF were found to be 25.68 (4.41) (range 11-35), 22.39 (4.11) (range 9-30), 11.78 (1.75) (range 6-15) and 29.42 (4.67) (range 13-40). After conversion of the raw scores into transformed scores on a 0-100 scale and categorization into low, moderate and high levels of quality of life, high levels of quality of life was noted in 58.5%, 64%, 87% and 59% in the four domains of WHOQOL-BREF, with less than 10% of the participants reporting low quality of life in each of the domains. These scores are much higher than most of the studies reported.^{5,18} One of the possible causes of the high scores can be the lower severity of the illness in the patients interviewed. The patients who were severely ill were often not in a position to provide consent and answer the whole questionnaire. No ICU patients were included in the study and the patients were only chosen from the general medicine wards. Improvement in symptoms after admission and the easy and cheap access to healthcare for most patients may have also played a role in patients subjectively reporting a higher quality of life. Lower socioeconomic status was found to be associated with lower quality of life in all four domains of WHOQOL-BREF. Older age, unemployment with more number of hospitalizations in the past year was found to be significantly associated with lower physical health quality of life, while married patients reported a greater quality of life in the social relationships domain.

Perceived stress was found to be negatively correlated with quality of life, with greater stress levels being associated with overall poorer quality of life in all four domains of WHOQOL-BREF. These findings are in line with some of the previous studies assessing the relationship between perceived stress and quality of life in patients with chronic kidney disease and patients living with HIV/AIDS.^{10,20} Perceived stress was also found to be able to predict 14-47% of the variance in the four domains of the quality of life, with the greatest predictive value for the psychological health.

CONCLUSIONS

Medical illness and hospitalization are stressful situations which significantly impair the quality of life. Medical illness and hospitalization are associated with increased perceived stress levels. Perceived stress is significantly associated with a lower quality of life in all domains. This study emphasizes the need for better integration of medical and psychiatric services to improve the overall health of the patient and further research in the field to understand the association between stress and quality of life better.

This study highlights the high levels of psychological morbidity in medically ill patients and its impact on the quality of life. This emphasises the need for better psychiatric liaison services which will help early detection and treatment of psychological comorbidities. This study reflects the stress and quality of life of a small segment of the local population and may not be reflective of the general population in the rest of India. Hence, in future, it is essential

to conduct further research on these factors and, in addition, study factors like socio-cultural beliefs and illness beliefs to better understand the interplay between stress and quality of life.

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