Impact of Fatigue on Quality of Life in Homemakers of Gujarat: A correlational study

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***Abstract*—Context: Homemakers in India face significant physical and emotional burdens due to the demands of household responsibilities. This constant workload, often unrecognized, can lead to Fatigue, ultimately impacting their overall Quality of Life (QOL).**
Aim: To evaluate the correlation between Fatigue and quality of life among homemakers in Gujarat.
Setting and Design: A community-based, cross-sectional correlational study was conducted over six months, involving 210 homemakers aged between 25 and 60 years.
Methods and Material: Participants were selected through convenient sampling. Fatigue levels were assessed using the Gujarati version of the Fatigue Assessment Scale (FAS), while QOL was evaluated using the Gujarati version of the SF-12 questionnaire.
Statistical Analysis Used: Data were analysed using SPSS version 26. Normality was checked using the Shapiro-Wilk test. As data were not normally distributed, Spearman's rank correlation coefficient was used to assess the relationship between Fatigue and QOL. A p-value < 0.05 was considered statistically significant.
Result: The mean FAS score was 22.84 ± 7.12, indicating mild to moderate Fatigue. A moderate negative correlation was found between Fatigue and overall QOL ($r = -0.417$, $p < 0.001$), Age Group of 41-50 years were affected maximally ($r = -0.528$, $p < 0.001$). In most homemakers, Physical components of QOL were more affected than mental components.
Conclusion: This study reveals that Fatigue has negative impact on the Quality of Life in homemakers of Gujarat and the impact becomes more significant with age. This impact is specifically evident in homemakers of middle age group.

***Index Terms*—Fatigue, Fatigue Assessment Scale, Homemakers, Quality of Life, SF-12**

I. INTRODUCTION

According to the ILO, 53% of women in India focus on homemaking, balancing roles as mothers, wives, and daughters. Due to societal expectations, many women leave their jobs after marriage, leaving their goals unmet and becoming financially dependent.[1] Sociologist concluded that household chores and choices play a key role in housework or are facilitating factors for creating a comfortable environment for family members. It includes taking care of and rearing children, providing for family's necessary requirements and needs.[2] This responsibility can lead to physical and emotional Fatigue, which may be acute or chronic.[3] Fatigue affects nearly 25% of Indian women, often linked to health issues, and impacts their Quality of Life.[4] "Quality of Life relates both to adequacy of material circumstances and to personal feelings about these circumstances".[5] Family support plays a crucial role in women's well-being.[6] Due to overload of household chores and its responsibilities, homemakers may feel tired. This Fatigue will affect the both physical as well as mental health of females.[7] It may impact women's lives by affecting their ability to perform daily tasks of household work such as cooking, cleaning or working. It can be challenging for females to engage in social activities, leading to feelings of isolation and loneliness. This will directly or indirectly affect QOL of females. So, primary aim of this study is to correlate the impact of Fatigue on Quality of Life in homemakers of Gujarat.

II. MATERIALS & METHODS

A cross-sectional correlation study was conducted in a community setting in Gujarat to evaluate the relationship between Fatigue and quality of life among homemakers. A total of 210 participants, aged between 25 and 60 years, were selected using a convenient sampling technique. Inclusion criteria comprised of homemakers between age of 25 to 60 years and who reported complaints of Fatigue, irrespective of their

marital status, family type, education level, or body mass index (BMI). Women who had undergone surgery within the last six months, those diagnosed with major neuromuscular, musculoskeletal, metabolic, or cardiopulmonary disorders, pregnant women, and those engaged in either full-time or part-time employment were excluded from the study.

Following instruments were used: 1) Digital weighing scale was used for checking weight measurement, 2) Stadiometer for height measurement and two validated Gujarati-translated questionnaires: 3) Fatigue Assessment Scale (FAS), 4) Short Form-12 (SF-12).

The FAS represents a potentially valuable assessment instrument with promising internal consistency reliability & validity. Gender bias in FAS does not have consequences for use of FAS. The scale would evaluate all aspects of Fatigue, developers (Michielsen and Colleagues) chose items to represent both physical and mental symptoms. Developers analysed the scale's psychometric properties and found an internal consistency of 0.90. Each item of the FAS is answered using a five-point, Likert-type scale ranging from 1 (never) to 5 (always). Items 4 and 10 are reverse scored. Total scores ranges from 10, indicating the lowest level of Fatigue, to 50, denoting the highest.[8] The Gujarati version of FAS scale is a brief, easy-to-use, reliable and valid scale for assessing Fatigue in healthy Gujarati population. The α value was 0.91 and Correlation Coefficient value was 0.92 showed that the Gujarati FAS has excellent test-retest reliability. For content validity, the kappa value of k=0.75 (95%CI: 0.749, 0.755, p = 0.000). Gujarati FAS scale cab be used in researches as a clinical tool to identify both physical and mental Fatigue.[9] Score of FAS scale can be calculated by manually.

SF-12 is a 12-item scale which is used as a QOL measure. It is a shortened version of SF-36. The questions are drawn from 8 domains of SF-36. The biggest benefit of SF-12 is that it requires lesser time to complete and yet checks all the components of Quality of Life. SF-12 and its component scales appear to be valid and useful tools for identifying differences in a population on the basis of social determinants of health.[10] The scoring yields two summary scores: Physical Component Summary (PCS) and Mental Component Summary (MCS). Higher scores on both MCS & PCS indicate better physical and mental health, respectively. Score is calculated by SF-12 calculator. SF-12 is translated in many regional languages for easy understanding of local population. So, Gujarati version of SF-12 is also available. Reliability and validity of Gujarati version of SF-12 was assessed by intraclass coefficient correlation, and the value was 0.703 and 0.986, respectively.[11] The total score of SF-12 is 100; 50 points for each component (mental and physical).

Informed consent was obtained from participants. Demographic data such as age(years), height(cm), weight(kg), BMI(kg/m^2), marital and educational status, family status and household work patterns were recorded. Participants were asked to complete the FAS and SF-12 questionnaires. Data were manually scored for FAS and calculated by using the SF-12 calculator for SF-12 questionnaire. After that data was segregated and analysed statistically.

III. RESULT

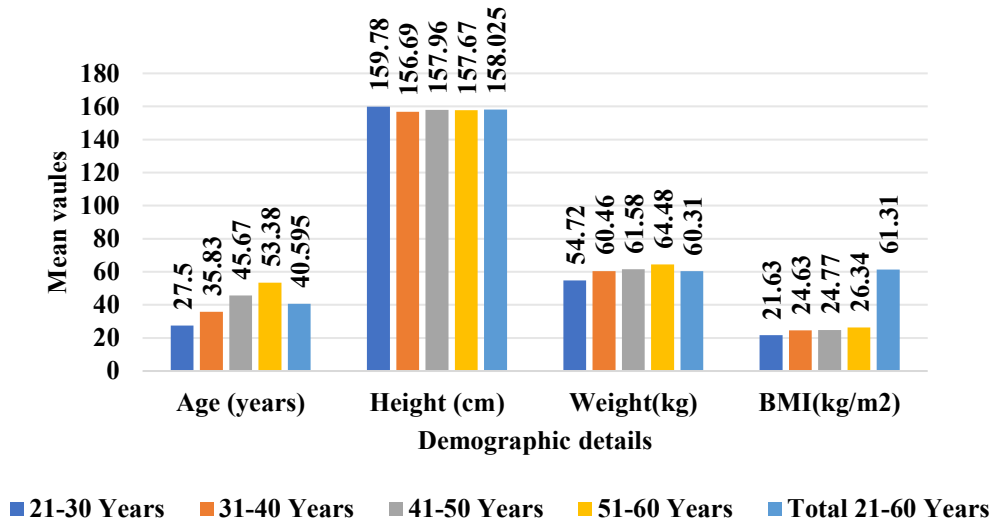
For statistical analysis of correlation between Fatigue and QOL in homemakers; SPSS version 26 was used.[12] The normality test was used to check the normality of the distribution of variables. As the data was not normally distributed, spearman's rank correlation was used to assess the correlation between variables(r). The Spearman's correlation coefficient ranges from -1 to +1, a positive value indicates a positive correlation and a negative value indicates a negative value indicates a negative correlation. The level of significant (P-value) was kept as <0.05.[13] Out of total 210 homemakers; 36(17%), 72(34%),81(39%) and 21(10%) in age group of 21-30 years, 31-40 years, 41-50 years and 51-60 years respectively.

Table 1: Demographic details of Homemakers (Mean ± SD)

Age Group(years)	N	%	Age(Years)	Height(cm)	Weight(Kg)	BMI(Kg/m2)
21-30	36	17%	27.5 ± 1.61	159.78 ± 7.22	54.72 ± 9.20	21.63 ± 3.60
31-40	72	34%	35.83 ± 3.21	156.69 ± 7.66	60.46 ± 10.15	24.63 ± 4.41
41-50	81	39%	45.67 ± 2.68	157.96 ± 7.36	61.58 ± 11.07	24.77 ± 4.51
51-60	21	10%	53.38 ± 2.16	157.67 ± 6.08	64.48 ± 8.24	26.34 ± 3.83
Total	210	100%	40.60 ± 2.42	158.03 ± 7.08	60.31 ± 9.67	24.34 ± 4.09

[%=Percentage, BMI= Body Mass Index]

Graph 1- Age-wise mean values of Demographic details for Homemakers



A total of 210 homemakers aged between 25 and 60 years participated in the study. Table 1 and Graph 1 shows, The mean age was 40.60 (± 9.67) years. And the average body mass index (BMI) was 24.34 (± 4.09) kg/m², indicating a normal BMI range across the population.

Table 2: Mean ± SD values of FAS, MCS, PCS and Composite score of SF-12

Age Group (years)	N	FAS (Mean ± SD)	SF-12(MCS) (Mean ± SD)	SF-12(PCS) (Mean ± SD)	Composite score of SF-12 (Mean ± SD)
21-30	36	21.22 ± 6.99	36.16 ± 5.74	44.26 ± 7.56	40.21 ± 5.73
31-40	72	21.65 ± 6.13	39.76 ± 5.94	44.31 ± 7.74	42.04 ± 1.63
41-50	81	23.27 ± 6.89	40.22 ± 7.01	42.53 ± 8.01	41.38 ± 1.63
51-60	21	28 ± 9.06	41.86 ± 6.65	37.09 ± 10.70	39.48 ± 3.37
TOTAL	210	22.84 ± 7.12	40.04 ± 6.41	42.89 ± 8.36	41.47 ± 2.02

Table 2 shows, Overall the mean score ± SD of (FAS) was 22.84 ± 7.12, indicating mild to moderate Fatigue among all participants. Fatigue levels increased with age, with the highest mean FAS score observed in the 51–60 years group (28.0 ± 9.06) which indicate maximum Fatigue and the lowest in the 21–30 years group (21.22 ± 6.99) which indicate minimum Fatigue. The mean score ± SD of Mental Component Score (MCS) and Physical Component Score (PCS) of SF-12 were 40.04 ± 6.41 and 42.89 ± 8.36, respectively. The lowest PCS was noted in age group of 51–60 years (37.09 ± 10.70) and highest PCS was noted in the age group of 21-30 years (44.26 ± 7.56) which suggest physical component was declined with age. While the lowest MCS was found in the youngest age group of 21–30 years (36.16 ± 5.74) and highest MCS was found in age group of 51-60 years (41.86 ± 6.65) which suggest mental component was increased with age.

The mean score ± SD of SF-12(composite score) were 40.21 ± 5.73, 42.04 ± 3.22, 41.38 ± 1.63 and 39.48 ± 2.02 in age group of 21-30 years, 31-40 years, 41-50 years and 51-60 years, respectively.

Table 3: Correlation of FAS with MCS, PCS and Composite score of SF-12

Age Group(years)	N	Correlation of FAS with MCS of SF-12		Correlation of FAS with PCS of SF-12		Correlation of FAS with Composite score of SF-12	
		Correlation coefficient (r)	p value	Correlation coefficient (r)	p value	Correlation coefficient (r)	p value
21-30	36	-0.229	0.178	-0.002	0.990	-0.100	0.560
31-40	72	0.078	0.513	-0.311	0.008	-0.307	0.009
41-50	81	-0.303	0.006	-0.248	0.026	-0.528	0.000
51-60	21	0.075	0.747	-0.481	0.027	-0.462	0.035
Total	210	-0.102	0.14	-0.294	0.000	-0.417	0.000

Highlight shows the statistical significant correlation

Graph 2 - Scatter plot of correlation

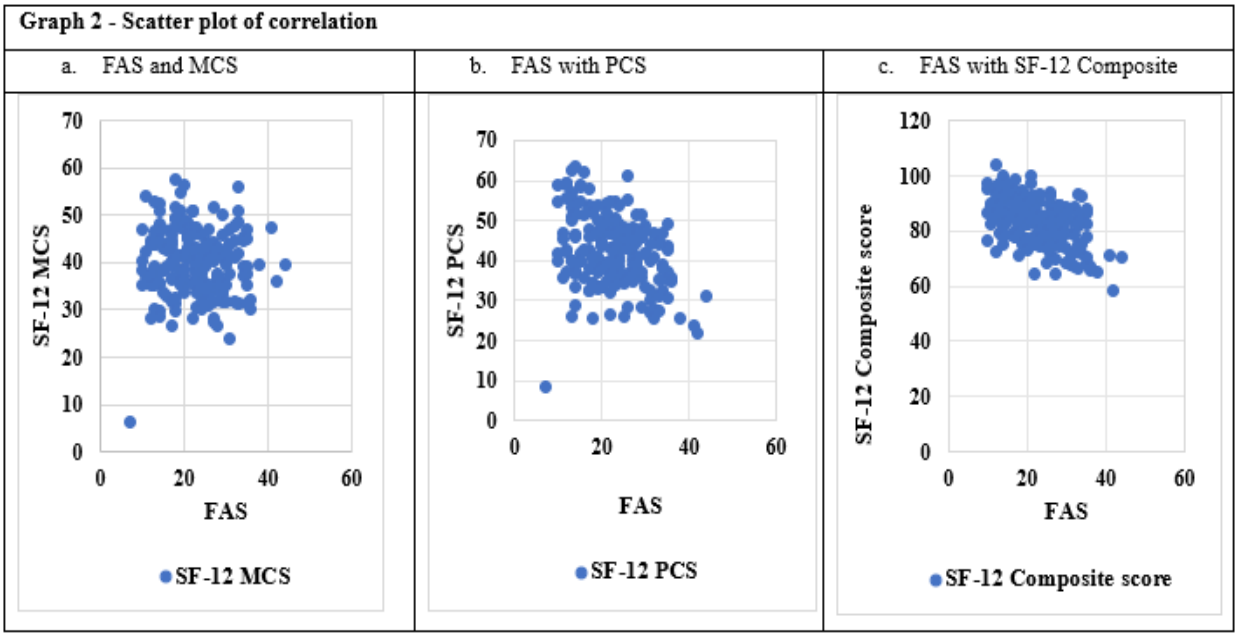


Table 3 and Graph 2 shows, A moderate negative statistically significant correlation was found between FAS and the overall composite score of SF-12 ($r = -0.417$, $p < 0.000$), suggesting that increased Fatigue was associated with decreased Quality of Life. Age group of 41–50 years showed the moderate negative statistically significant correlation ($r = -0.528$, $p < 0.000$). Age group of 31–40 years and 51–60 years also showed weak to moderate negative significant correlations ($r = -0.307$, $p < 0.009$ and $r = -0.462$, $p < 0.035$ respectively). And the age group of 21–30 years showed no statistically significant correlation ($r = -0.100$, $p = 0.560$).

A weak negative statistically significant correlation was observed between FAS and PCS overall ($r = -0.294$, $p < 0.001$). However, weak negative statistically significant correlation was derived between FAS and physical components (PCS) in age group of 31-40 years ($r = -0.311$, $p < 0.008$) and 41-50 years ($r = -0.248$, $p < 0.026$). Moreover, moderate negative statistically significant correlation was found between FAS and physical components in age group of 51-60 years ($r = -0.481$, $p < 0.027$).

A very weak negative statistically significant correlation was found between FAS and MCS overall ($r = -0.102$, $p = 0.14$). There was no statistically significant correlation in other age group, though correlation was a weak negative statistically significant in age group of 41-50 years ($r = -0.303$, $p < 0.006$). Overall, no statistical significant correlation was found between FAS with MCS, PCS and composite SF-12 in age group of 21-30 years.

IV. DISCUSSION

The present cross-sectional study examines the relationship between Fatigue and Quality of Life among 210 homemakers of Gujarat. Validated quantifying tools were used to assess Fatigue (FAS) and Quality of Life (SF-12). This data was followed by correlational analysis across various age groups of homemakers.

Fatigue is a common symptom among developing countries. Fatigue in women has often attributed to anemia and dietary deficits, sleep disturbances, mental health condition, overworking, dehydration, etc. In this study, the mean value of FAS among 210 participants was 22.84 (± 7.12), indicating that most of homemakers experience mild to moderate Fatigue. Notably, Fatigue was lowest in the youngest group (21-30 years) that is 21.22 (± 6.99) and highest in the oldest group (51-60 years) that is 28 (± 9.06), with a significant increase across age categories. This finding suggest Fatigue is aligned with natural physiological aging processes. This trend verifies the findings of Patel et al. (2005) who reported that chronic Fatigue in Indian women is strongly associated with age-related stress and gender-based responsibilities. Additionally, household workloads are rarely shared equally, especially in traditional or joint family structures, further burdening homemakers as they age.[4]

SF-12 results revealed that both the Mental Component Summary (MCS) and Physical Component Summary (PCS) scores declined with increasing age. The mean value of both MCS and PCS in 210 homemakers was 40.04 (± 6.41) and 42.89 (± 8.36), respectively. Lower MCS scores suggested mental stress, likely due to role overload, lack of personal time, or unfulfilled aspirations post-marriage. This aligns with the findings of Jayachitra & Jagannarayan (2021), who observed that women's Quality of Life, particularly psychological well-being, is impacted by age, family dynamics, and unmet personal goals. Homemakers often sacrifice career aspirations, social interaction, and autonomy, which can lead to emotional Fatigue and a sense of stagnation, especially in the absence of recognition or support.[1] Homemakers often engage in physically demanding tasks without rest, prioritize family needs over personal health, delaying medical attention for physical symptoms leading to chronic Fatigue, body aches or musculoskeletal issues. This directly lowers the PCS scores. The reason for mean value of MCS being less than that of PCS can be because homemakers have a less work-related stress, greater family time & support and flexibility & control over household work.

The finding of this study indicate a very weak negative statistically non-significant correlation of FAS with mental components (MCS) for all homemakers ($r = -0.102$, $p > 0.14$). There was no statistically significant correlation in other age group, though correlation was a weak negative statistically significant correlation in age group of 41-50 years ($r = -0.303$, $p < 0.006$). In this age, physical demand of work increases, also women of this age group experiencing peri-menopausal or menopausal symptoms such as Fatigue, mood swings, sleep disturbances and anxiety – which can affect physical as well as mental health.[14]

A weak negative statistically significant correlation was found between FAS with physical components (PCS) for all home makers ($r = -0.294$, $p < 0.000$). Analysing age group-wise, there was no statistically significant correlation was found in age group of 21-30 years because of higher energy levels and fewer responsibilities. However, weak negative statistically significant correlation was derived between FAS and physical components (PCS) in age group of 31-40 years ($r = -0.311$, $p < 0.008$) and 41-50 years ($r = -0.248$, $p < 0.026$) owing to reflecting the growing burden of family and increased household responsibilities. Moreover, moderate negative statistically significant correlation was found between FAS and physical components in age group of 51-60 years ($r = -0.481$, $p < 0.027$). This age group had the highest Fatigue levels but the impact on Quality of Life was slightly less severe, possibly due to increased family support. It suggest as the age increases Fatigue will increase and it will affect the Quality of Life because of aging, menopause, hormonal changes and vasomotor symptoms.[15]

A moderate negative statistically significant correlation was found between FAS and composite SF-12 overall ($r = -0.417$,$p < 0.000$). There was no statistical significant correlation in age group of 21-30 years because of younger age and better physical resilience. A weak negative statistically significant correlation of FAS was derived with composite SF-12

in age group of 31-40 years ($r = -0.307$, $p < 0.009$) because of females of this age group frequently juggle multiple roles such as, mother, wife, caregiver, etc. A moderate negative statistically significant correlation was found between FAS and composite SF-12 in age group of 41-50 years ($r = -0.528$, $p < 0.000$) because of perimenopausal transition, cumulative physical strain, psychosocial stress, etc. There was no significant correlation was found in age group of 51-60 years as number of participants in this age group was very less compare to others or most of them may be getting help from family members for their household chores.

Hence, this study reveals that Fatigue has negative impact on the Quality of Life in homemakers of Gujarat and the impact becomes more significant with age. Here, the study shows physical Fatigue was more than the mental Fatigue in homemakers across all age group. This impact is specifically consistent and evident in homemakers of middle age group (41-50 years). Overall, the study concludes the progressive burden of Fatigue on physical more than mental health of homemakers especially in middle age group. Thus, generating need for physical, emotional, and social support to improve their well-being.

Limitation of this study was sample size is less. Other aspects like whether they had any help, type of work done by homemakers, education, gynaecological status and family structure was not taken into account. Future recommendation for this study would be correlation of Fatigue and Quality of Life can also be found out for different group of women like full or part time working women or urban and rural set up. Longitudinal study design may give a better perspective of Fatigue & Quality of Life in homemakers.
Knowledge of this correlation between Fatigue & QOL can be implemented for assessing the cause of Fatigue both mental & physical.

REFERENCES

[1] Jagannarayan, Nandini & Chitra, Jaya. A study on factors influencing the quality of life of homemakers in Mumbai city. Art history. 2021;27(1(xi)):57-63.

[2] Saravi, F.K., Navidian, A., Rigi, S.N. et al. Comparing health-related quality of life of employed women and housewives: a cross-sectional study from southeast Iran. BMC Women's Health. 2012; 12:41.

[3] Tiesinga LJ, Dassen TW, Halfens RJ. Fatigue: a summary of the definitions, dimensions, and indicators. Nurs Diagn. 1996;7(2):51-62.

[4] Patel V, Kirkwood BR, Weiss H, Pednekar S, Fernandes J, Pereira B, Upadhye M, Mabey D. Chronic fatigue in developing countries: population-based survey of women in India. BMJ. 2005;330(7501):1190.

[5] Ahmad M, Khan A. Quality of life among married working women and housewives. International Journal of Engineering & Technology Singaporean Journal of social science. 2018:13-8.

[6] Dr. Jayachitra T.A, Nandini Jagannarayan. Self-esteem, A determinant of quality of life. A case study on housewives in Mumbai metro. Utkal historical research journal. 2021; 34:31

[7] Hung HM, Chen MF, Chen CH. Impact of fatigue, stress, and perceived health status on women with Rheumatic disease: A comparison study. J Nurs Res. 2020;28(3).

[8] Michielsen, H. J., De Vries, J., & Van Heck, G. L. (2003). Psychometric qualities of a brief self-rated fatigue measure the fatigue assessment scale. Journal of Psychosomatic Research. 2003; 54:345–352.

[9] Dr. Bosky M. Mehta. Reliability and validity of Gujarati version of Fatigue Assessment Scale (FAS)-A cross-sectional study. International Journal of Health Sciences and Research. 2023;13(7):55-60.

[10] Burdine JN, Felix MR, Abel AL, Wiltraut CJ, Musselman YJ. The SF-12 as a population health measure: an exploratory examination of potential for application. Health Serv Res. 2000;35(4):885-904.

[11] Mansi Bais, Gira Thakar. Reliability and Validity of Gujarati version of SF12 in geriatrics. International Journal of science and Research. 2022;11(1),1352-1355.

[12] Statistical analysis was done using Statistical Package for Social Sciences (SPSS) Version 26. Anesthesia & analgesia. 2018;126(5):1763-8.

[13] Schober P, Boer C, Schwarte LA, et al. Correlation coefficients: appropriate use and

interpretation. Anesth analg. 2018;126(5):1763-1768.
[14] Bauld R, Brown RF. Stress, psychological distress, psychosocial factors, menopause symptoms and physical health in women. Maturitas. 2009;62(2):160-165.
[15] Mohammadalizadeh Charandabi S, Rezaei N, Hakimi S, Montazeri A, Taheri S, Taghinejad H, Sayehmiri K. Quality of life of postmenopausal women and their spouses: a community-based study. Iran Red Crescent Med J. 2015;17(3):e21599.

List of Abbreviations
QOL: Quality of Life
FAS: Fatigue Assessment Scale
SF-12: Short Form-12
MCS: Mental Component Score
PCS: Physical Component Score
BMI: Body Mass Index
SPSS: Statistical Package for the Social Science
ILO: International Labour Organization

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