

Literature Review Family and Nurse Support in Improving Self Management in Patient with Diabetes Mellitus

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Abstract

Diabetes Mellitus is a disease that causes damage to the body's organs and tissues over time. According to Riskesdas 2018, it increased by 8.5 percent over 5 years. Diabetic patients who adhere to the 4 pillars of diabetes mellitus have better blood glucose levels, and this cannot be separated from the role of the family. Based on a preliminary study at the Anggrek Elderly Integrated Health Service Post, it was found that most elderly people live separately from their children, resulting in a lack of family involvement in managing DM. Additionally, the elderly also need support for self-management, which can be obtained from family members and nurses. This research contributed to reviewing understand the condition of the elderly with DM in various aspects of family support and the implementation of nursing in improving the knowledge of self-management in Diabetes Mellitus patients. Therefore, the researchers conducted a literature review to understand the condition of the elderly with DM in various aspects of family support and the implementation of nursing in improving the knowledge of self-management in Diabetes Mellitus patients. The review of articles yielded 4 main aspects: family support can improve self-management in DM patients, family support does not affect blood sugar levels, nurse education improves DM patient understanding, and educational level affects the implementation of education in patients. Conclusion. The education level of nurses influences patient education, and family support enhances patient self-management.

Keywords: Diabetic Patients; Family; Nurse Support.

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1. Introduction

Diabetes Mellitus is a heterogeneous group of disorders characterized by an increase in blood glucose levels or hyperglycemia ([Suddarth, 2022](#)). Signs and symptoms in patients with Diabetes Mellitus vary widely, such as frequent thirst and drinking, frequent Urination and frequent hunger. According to the World Health Organization (WHO), the leading causes of death are cardiovascular disease, stroke, and Diabetes ranking third. In low and middle-income countries, approximately 422 million people suffer from Diabetes. In 2018, the Ministry of Health of the Republic of Indonesia stated that based on doctor-diagnosed cases, the prevalence of diabetes was 4.79 percent in the population aged over 15 years, and this figure increased to 8.5 percent in 2018. In Indonesia, the highest prevalence occurred in Jakarta, with approximately 250,000 residents suffering from diabetes in 2018, representing a 2.5 percent increase to 3.4 percent. Meanwhile, in Yogyakarta, the prevalence of diabetes was twice the national average ([RISKESDAS, 2018](#)).

Based on interviews with the Kader Posyandu Lansia Anggrek, there are a considerable number of Diabetes patients in the Posyandu with a diverse age distribution. Elderly individuals with Diabetes often participate in Posyandu activities every month, but sometimes they need reminders about managing their illness. Many of these elderly individuals live only with their spouses, as their children have their own homes. Healthcare for sick individuals should be understood by the family, which plays a crucial role in this matter ([Rahayu et al., 2014](#)). The first person to provide assistance to a sick family member is the family itself. The first person to provide assistance to a sick family member is the family. Families also help each member maintain their health by fulfilling needs such as food, drink, bathing, rest, recreation, exercise, and others. Family support further strengthens the quality of life changes for patients, family involvement in support, providing input, and reminding patients to adhere to diabetes management are examples of positive support provided by families to patients ([Rahayu et al., 2014](#)). Diabetes patients who regularly adhere to

the 4 pillars of diabetes mellitus are better at controlling blood glucose compared to those who do not adhere regularly (Nurbaiti & Safariantini, 2019). Management of these 4 pillars requires knowledge and participation from the family. This is in line with research findings stating that there is an influence of the relationship between family support and patient adherence in implementing the 4 pillars of type 2 DM management after controlling for confounding variables such as education level, economic status, and complications (Prawirasastra et al., 2017). In addition, other research states that besides the 4 pillars of DM, self-management of DM patients is also very important. Because most respondents engage in self-management such as blood sugar control management, dietary management, exercise, and utilizing health services. Respondents have shown good self-management and there is a significant relationship between family support and self-management behavior in type 2 DM patients at Simpang IV Sipin City Jambi Health Center (AZ, 2018).

According to research, there is a relationship between good family support and good quality of life, with 47 respondents (70.1%) and poor quality of life with 20 respondents (29.9%). The above research results prove the relationship between family support and adherence to the management of the 4 Pillars of Diabetes Mellitus and Self-Management with a quantitative approach in terms of numerical results. This makes researchers interested in exploring family and nurse support in enhancing knowledge about self-management in patients with Diabetes Mellitus deeply through in-depth interviews, thus being able to ascertain facts or findings in the environment of Diabetes Mellitus patients

2. Method

This research is a literature review conducted using a literature review method, specifically employing a scoping review approach, which involves comprehensively collecting research that has been conducted to find a specific topic within the results of those studies (Sugiyono, 2009). Data collection for this research utilized three websites: Google Scholar, PubMed, and Elsevier, with keywords such as "diabetes management," "family support," "Diabetes Mellitus pillar management," "family support of diabetic management," and "family support with diabetes." The search for articles included those published between 2015 and 2020. The population in this literature review consists of articles with the theme of diabetes mellitus management, with the research samples being articles on family support regarding the pillars of diabetes mellitus and nurse support for diabetic self-management. The criteria for journals to be reviewed are research journals meeting the inclusion criteria as outlined in Table 1.

The exclusion criteria for this study include research involving systematic reviews and subjects with Diabetes Mellitus complications. The analysis employed is content analysis, wherein each research article is coded based on the themes of Diabetes Mellitus management and family support in diabetes care.

Table 1. Research Inclusion Criteria

Criteria	Inclusion
Duration	Maximum journal publication of 5 years (2015-2020)
Language	Indonesian and English language
Subject	Patients with diabetes mellitus, family members with diabetes mellitus, health personnel
Type Of Journal	Original research articles (not research reviews) and full text
Theme or content of the journal	The research theme on the management of diabetes mellitus includes: family support for the care of diabetes mellitus, family support as a pillar of diabetes mellitus, family support for diabetic mellitus, management of diabetes mellitus, and self-management of diabetes.

3. Results and Discussion

Based on the results of journal searches on Google Scholar, PubMed, and Elsevier using keywords such as diabetes management, family support, management of Diabetes Mellitus pillars, family support of diabetic management, and family support with diabetes, the researchers found 2520 article titles relevant to the keywords. However, not all research articles met the criteria for inclusion based on the research objectives and themes.

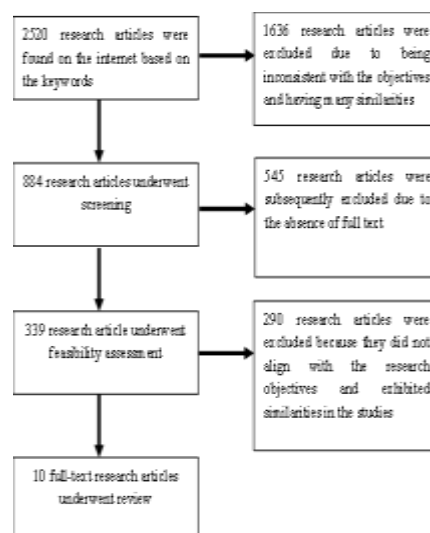


Figure 1. Flow of Journal Review based on PRISMA Flow Diagram

The researchers then conducted an advanced search on Google Scholar using keywords within the title (in title) that matched the initial search keywords, resulting in 884 articles found, with 1636 articles excluded as they did not match the research theme.

A total of 884 research articles were found, and then a screening of the article content was conducted to determine whether the manuscripts were complete or not. Out of these, 545 research article manuscripts were excluded because the full text was not available, resulting in 339 full-text articles. Feasibility analysis was conducted on the 339 articles that had been found with full text. Research articles with similarities to the research theme/content were then selected based on criteria that matched the research objectives. Research journals that were not selected but had similar themes were then excluded, totaling 290 full-text research articles excluded, leaving 10 full-text articles for review. This literature review uses the PRISMA flowchart to explain the sorting of articles through 5 stages: eligibility criteria for articles, sources of information or journal searches, sorting or extraction of articles, data collection, and sorting of selected article items. The flow of journal sorting being reviewed can be seen in Figure 1, the journal review flowchart.

a. Family support enhances the self-management of patients with Diabetes Mellitus

Family serves as a means of information to realize support and control daily activities for patients with Type 2 Diabetes Mellitus ([Agustina Rahmawati & Widyatuti, 2018](#)). One form of support that family can provide to patients with Diabetes Mellitus is the provision of information ([Suddarth, 2022](#)). The family's role here is as both the recipient and disseminator of information. The relationship between information support and self-care in patients with Type 2 Diabetes Mellitus highlights the significant role of the family in caring for these patients. To navigate the challenging times faced by individuals with Diabetes Mellitus, they require support and attention from their families ([Agustina Rahmawati & Widyatuti, 2018](#); [E.G. Jones, Bowden, MM, 2010](#)).

Respondents, who are families with members diagnosed with Diabetes Mellitus, have a positive perception of the family's education on Diabetes Mellitus ([Trisnadewi et al., 2016](#)). There is a significant correlation between family support and self-management behavior in patients with Type 2 Diabetes Mellitus at the Simpang IV Community Health Center. The majority of respondents, accounting for 66.7%, exhibit satisfactory self-

management, indicating a strong relationship between family support and self management of Type 2 Diabetes Mellitus patients at the Pasir Kaliki Health Center, Bandung City ([Ningrum et al., 2019](#)).

b. Family support does not affect blood sugar level control

According to other research, the majority of family support has an influence on blood sugar control. The support often provided includes informational support, assessment (appreciation, feedback), emotional support, as well as physical assistance/support. Respondents families consistently provide support in facing the illness, enabling patients to accept their condition and improve their quality of life, enhancing self-confidence in successfully controlling their blood sugar levels. A positive relationship was found between good family support and improved quality of life for elderly individuals with diabetes mellitus, with data showing that 47 respondents (70%) had a good quality of life, and the statistical test result was $p = 0.000$ ([Prawirasatra et al., 2017](#)).

Other research results state that there is a significant relationship between family support and the fulfillment of blood sugar control, and patient compliance with blood sugar control is excellent due to the knowledge and support provided by families to patients with Diabetes Mellitus ([Rosyid Nur Fahrur, Febriyanti, 2017](#)). Family support is considered very supportive of self-management of diabetes and diabetic self-care in the intervention group, with 66.7% stating that their families are very supportive ([Sudirman, 2018](#)).

c. Nurse education improves patient's self-management knowledge

The difference in quality of life before and after self-management indicates that the education provided to patients enhances self-management in individuals with Diabetes Mellitus ([Sari, 2020](#)). The provision of education to diabetes mellitus patients leads to an improvement in self-care for these patients ([Qurniawati et al., 2020](#)). The influence of brainstorming education on type 2 diabetes self-care is significant ($p\text{-value} = 0.00$) ([Wulan et al., 2020](#)).

Based on the above research results, it is mentioned that providing education to diabetes patients will enhance self-management and self-care in these patients. Essentially, patients require information about their health condition, and the education provided by nurses will increase the knowledge of diabetes patients to perform self-care at home. As known, diabetes mellitus is a chronic disease that requires monitoring and care both at home and when the patient is in the hospital. Therefore, health education significantly influences self-management and self-care in patients with diabetes mellitus.

Table 2. Research on Family Support in the Management of Diabetes Mellitus Reviewed by the Researcher

No	Researcher, Country	The Research Objectives	Research design, instruments, and statistical analysis / methods	Sampling size, sampling method	Result / Findings	Aspect
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1.	Pesantes MA, Del Valle A, Diez-Canseco F, et al. . 2018 Peru	To understand various aspects related to the experiences of patients with T2DM in managing their condition	Randomized Control Trial with semi-structured interviews guided by M.A.P and F.D.C. Data analysis conducted using deductive analysis	Population: 40 patients with type 2 diabetes. Sample: 20 patients with type 2 diabetes. Sample selection method using 2 approaches: consulting an endocrinologist to select interviewable patients and convenience sampling. Inclusion criteria: patients aged 18 and above diagnosed with T2DM for at least 1 year	Themes identified: 1. Support and attention 2. Always accompanied by family 3. Family vigilance and control 4. Social isolation and feeling excluded	The poor acceptance of the intervention by healthcare professionals. The support of immediate family members during treatment influences the self-management practices of patients.
2.	Ravi, S., Kumar, S., & Gopichandran, V. (2018) South India	To assess whether family support for diabetes patients improves self-management and blood sugar control in the urban population of South India	Quantitative: Cross-sectional Instrument: Self-management questionnaire from the Summary of Diabetes Self-Care Activities with question scores on a 1-5 scale. The questionnaire includes patterns of diet, avoiding fatty foods, adequate intake of vegetables and fluids, exercise, blood sugar monitoring, and foot care. Another questionnaire for family support uses the Diabetes Family Behavior Checklist with 16 questions.	Population: 200 outpatient diabetes patients at the Diabetes Clinic	a. There is a significant relationship between family support scores and diabetes self-management scores ($\beta = 0.26, p < 0.001$). b. There is no significant relationship between diabetes self-management and the average blood glucose value ($\beta = -46.31, p = 0.082$). c. Age has a positive correlation with self-management scores ($\beta = 0.002, p = 0.405$).	Family support enhances diabetes self-management in patients, but does not improve blood sugar control
(1)	(2)	(3)	(4)	(5)	(6)	(7)

			Data analysis conducted using IBM SPSS Statistics version 21		<ul style="list-style-type: none"> d. Other variables such as education, family type, and monthly family income have no significant influence. e. Diabetes diet and blood glucose testing have a good relationship with self-management, while lifestyle habits have a very poor relationship with exercise and foot care. 	
3	Chairunnisa Mei Yuni, Noor Diani, Ichsan Rizany (2020) Indonesia	To determine the influence of Diabetes Self-Management Education and Support (DSME/S) on the improvement of knowledge in managing patients with Type 2 Diabetes Mellitus	Quantitative: Experimental research with a pre-experimental method using a one-group pretest-posttest design. The research instruments include modules and questionnaires developed from the DKQ-24 questionnaire by Garcia and the Medical Surgical Nursing book by Smeltzer & Bare, consisting of 33 questions using a Likert scale (0=don't know, 1=no, and 2=yes). Data analysis will use the paired t-test statistical method	The research sample consists of 30 patients with Type 2 Diabetes Mellitus at Idaman Regional General Hospital in Banjarbaru City. Inclusion criteria for patients with Type 2 Diabetes Mellitus are aged between 30-65 years	<ul style="list-style-type: none"> a. The paired t-test results show the influence of DSME/S on the improvement of self-management knowledge in Type 2 Diabetes Mellitus patients, which is 0.0001 ($p < \alpha$; $\alpha = 0.0005$), with an increase of 15.97%. b. DSME/S is effective in enhancing the knowledge of Type 2 Diabetes Mellitus patients, making it suitable for providing self-management education to prevent complications in Type 2 Diabetes Mellitus patients 	Self-management knowledge independently increases in patients with Type 2 Diabetes Mellitus

(1)	(2)	(3)	(4)	(5)	(6)	(7)
4	Yanti, S., & Mertawati, G. A. A. R. (2018) Pekanbaru Indonesia	Understanding the relationship between diabetes management knowledge and nurse motivation to educate DM patients in the inpatient ward of Santa Maria Hospital Pekanbaru	Quantitative: A descriptive correlational research design with a cross-sectional approach. Research instruments include a questionnaire sheet on nurse demographics and a questionnaire on nurse knowledge and motivation. Data analysis involves bivariate analysis using the chi-square test to determine the relationship between variables	The research population consists of 74 nurses working in the inpatient ward, with a sample size of 42 individuals. Inclusion criteria include staff nurses and those working in general rooms	a. P value = 0.005 < 0.05 indicates that there is a relationship between diabetes management knowledge and nurse motivation in educating DM patients. Out of 21 nurses with insufficient knowledge, 75% have low motivation, and 27% have high motivation. b. Nurses with good knowledge have a higher percentage of high motivation (72.7%) and low motivation (25%)	The motivation of nurses to educate patients about DM is influenced by the level of education of the nurse
5.	Wichit, N., Mnatzaganian, G., Courtney, M., Schulz, P., & Johnson, M. (2017) Thailand	To evaluate family-oriented interventions theoretically designed to enhance self-efficacy, self-management, blood sugar control, and quality of life in individuals with Type 2 Diabetes in Thailand.	Randomized controlled trial with single-blinded design. Data analysis will be conducted using Pearson Chi-Square and Mann-Whitney Test	The population consists of adult patients diagnosed with T2DM receiving outpatient care at the diabetes clinic. Sample criteria include a diagnosis of T2DM for at least 6 months and age 35 years and above	a. Diabetes self-efficacy, self-management, and quality of life increased in the intervention group, but there was no improvement in the control group. b. Self-management in the control group increased by 14.3 points ($\beta=14.3$, (95% CI 10.7-17.9), $p<0.0001$). c. Self-management is better in female patients with a slimmer physique d. There is no difference between the two groups regarding quality of life/blood sugar control	Family support enhances self-efficacy, self-management, and quality of life in patients with DM, especially in patients of a specific gender

(1)	(2)	(3)	(4)	(5)	(6)	(7)
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6.	Carole A.Chrvala, Dawn Sherr, Ruth D.Lipman (2015) USA	Evaluating the influence of education on diabetes self-management and the methods of support, providers, timing, and blood sugar control in patients with Type 2 Diabetes Mellitus.	Randomized controlled trial (RCT) with systematic review and meta-analysis. Presented in the form of a table with selected characteristics according to the systematic review research (publication, intervention group, and control)	<ul style="list-style-type: none"> a. Encompassing 118 unique intervention types. b. Participants in this review include studies with sample ages of 18 years or older, A1C levels, duration of diabetes, and patients with comorbidities. c. Participants with both Type 1 and Type 2 diabetes 	<ul style="list-style-type: none"> a. This review involves 118 specific interventions. b. 61.9% reported significant changes in A1C. c. Overall, the average reduction in A1C is 0.7 and 0.17 for the intervention and control groups. d. The average reduction in A1C is 0.57. e. The result of the combination of group and individual adherence shows the most significant reduction in A1C at 0.88. f. Meetings > 10 hours are associated with a higher proportion of interventions with significant A1C reduction at 70%. g. In patients with continuously increasing blood sugar levels (A1C > 9) 	The data from the systematic review indicates a significant relationship between diabetes self-management education and a decrease in A1C levels
7.	Mahmoud Werfalli, Peter J. Raubenheimer, Mark Engel, Alffred Musekiwa, Kirsten	To understand the role of community healthcare workers managing diabetes self-management in low- and middle-income countries with primary care regulation and evaluate the implementation of patient healthcare in diabetes	A systematic review with the first rule of meta-analysis studies excluded. Second, the research question about 'how the role of community healthcare workers in managing diabetes self-management can improve the quality of diabetes care' is modified to 'understand the methods of programs used and the results of implementation.	A study evaluating COMP-DSMP in adults with type 1 and 2 diabetes as determined by the World Bank's Low- and Middle-Income Countries (LMIC) from January 2000 to December 2019	<ul style="list-style-type: none"> 1. There were 702 reports identified, with 8 studies involving 6090 participants. 2. Community-based groups with healthcare workers as leaders for diabetes management programs were inconsistent in improving clinic, behavioral, and psychological outcomes. 	The role of healthcare professionals in self-management of type 1 and type 2 diabetes is suboptimal due to inconsistency in the improvement of interventions in clinics
(1)	(2)	(3)	(4)	(5)	(6)	(7)

			Third, adding the Risk of Bias in Nonrandomized Studies of Intervention (ROBINS) as a research tool for non-randomized studies		3. Several studies had evaluations with poor quality. 4. Most of them exhibited bias in their outcomes. 5. There is heterogeneity in the characteristics of interventions such as intervention groups, selection, recruitment, training, and duration of intervention	
8.	Oktorina, R., Sitorus, R., & Sukmarini, L. (2019). Depok Indonesia	To determine the impact of education using a self-instructional module on the level of knowledge about diabetes mellitus in patients with type 2 diabetes mellitus	Quasi-experimental with one-group pretest-posttest design. The instrument used is a modification of DKS with 10 items covering general knowledge about diabetes. Analysis is done using the Wilcoxon test	The sample size is 29 individuals with type 2 diabetes, and the sampling technique used is consecutive sampling	There is a difference in knowledge ($p < 0.001$; $\alpha < 0.05$) before and after education with the self-instructional module	The knowledge of type 2 diabetes patients increases after being provided with education using the Self-Instructional Module
9.	Sari, N. P. W. P. (2017) Surabaya, Indonesia	Analyzing the influence of nursing agency on compliance, self-care agency (SCA), and self-care activities in patients with diabetes mellitus	Quantitative: A pre-experimental study with the one-group pretest-posttest design approach. The instruments used are handout, SAP (Self-Administered Pamphlet), and a questionnaire. For self-care agency (SCA), The Exercise of Self Care Agency Scale is utilized The instrument to measure self-care activities uses the Self-Care Inventory Revised Version.	The population of this study is the residents suffering from diabetes mellitus in the Mojo neighborhood, Surabaya. The sample is taken using quota sampling, and the sample size is determined to be 30 individuals. Inclusion criteria include individuals aged 18 years and above (adults)	Nursing agency can increase compliance by 7.8%, Self-Care Agency (SCA) by 14.4%, and self-care activities by 12.9%. Nursing agency is proven to influence compliance, SCA, and self-care activities	Nursing Agency can improve compliance, Self-Care Agency, and self-care activities in patients with Diabetes Mellitus
(1)	(2)	(3)	(4)	(5)	(6)	(7)
9.			The compliance instrument is created by the researcher with			

			a combination of the adherence questionnaire from the Morisky Medication Adherence Scale. Data analysis is conducted using paired t-test with $\alpha < 0.05$		
10.	Kristianingrum, N. D., Wiarsih, W., & Nursasi, A. Y. (2018). Jawa Timur Indonesia	To explore the perceived family support among patients with diabetes mellitus in self-management	Qualitative: A study with a phenomenological descriptive approach. Data collection involved in-depth interviews and field notes recording. Data were analyzed using Colaizzi's method	The respondents consisted of 9 patients with diabetes mellitus	The perceived family support by DM patients includes assistance in daily activities, support in accessing healthcare services, meal preparation, financial assistance, attention, guidance, and problem-solving. The responses of DM patients to family support are expressions of happiness

d. The level of nurse education affects the implementation to patients

The role of nurses as educators is crucial for patients with Diabetes Mellitus because Diabetes Mellitus is a chronic disease that requires a lot of information, and this information is acquired through the implementation by a nurse. The delivery of this information is undoubtedly supported by the knowledge and skills of a nurse obtained from formal education. Several factors influencing patient education include knowledge, motivation, and workload. Even with adequate facilities and excellent hospital management, without good motivation, and sufficient knowledge, patient education may not be effectively carried out.

Another study states that all nurses working in inpatient wards have received good formal education, at least a Diploma III in nursing, which is an appropriate qualification for a nurse. Patient dissatisfaction with the implementation of education is caused by nurses lacking specialization in endocrinology or diabetes, affecting their ability to educate, especially about diabetes ([Wulan et al., 2020](#)).

The majority of respondents, 37 individuals (58.7%), perceive nurses as less proficient in providing education. Many obstacles can hinder nurses when giving education, such as barriers from both nurses and patients. Nurses may feel unprepared to provide education due to inadequate education, personal characteristics of the nurse, and time constraints. Additionally, unclear delegation, documentation of material, and lack of coordination among nurses can affect the education process provided to patients ([Yanti, 2020](#)).

The research results are supported by studies stating that, according to the Indonesian National Curriculum Framework (KKNI), a Diploma III education is at a level where nurses are vocational and understand the principles and knowledge in nursing practice. Moreover, 29.9% of the caring behavior of Diploma III nurses is mostly rated as good by patients. Nurses consistently speak politely and softly when communicating with patients. Nurses also consistently apply a caring attitude when providing nursing care to patients, where nurses and patients frequently interact with each other.

Based on the mentioned research results, it can be concluded that the level of education does not affect the implementation of a nurse towards patients. Essentially, all nurses working in inpatient wards handling nursing care for patients have a minimum Diploma III in nursing that meets the requirements according to KKNI. Patient complaints about inadequate nursing actions or dissatisfaction with information received are more likely due to the nurse's lack of specialization in a specific field, high workload in the ward, and a lack of coordination among nurses in nursing documentation.

4. Conclusions and Suggestions

Based on the results and discussion, it can be concluded that the aspects influencing self-management in diabetes patients are family support, education from nurses, and the level of education of nursing staff affecting patients' satisfaction with information and their level of understanding regarding their condition.

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