

## Stroke Knowledge and Informational Needs Among International Islamic University Malaysia Nursing Students: A Preliminary Study

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### ABSTRACT

**Introduction:** Stroke is one of the most recognisable diseases affecting the Malaysian population. The growing incidence of a stroke every year requires nursing students to get their knowledge updated.

**Objective:** To provide a baseline on our nursing student's level of knowledge and information needs on stroke to prepare them as future healthcare providers in the community.

**Methods:** A cross-sectional study was conducted using adapted questionnaires to assess the level of knowledge and information needs of stroke among 30 nursing students from Kulliyah of Nursing, International Islamic University Malaysia through a convenience sampling method. Descriptive statistics were used in data analysis via SPSS version 27.0.

**Results:** The mean age of the students was 23.23 ( $\pm 0.68$ ), 96.7% were female and residents of Mahallah Ummu Kalthum, all of them were year four students, and 93.3% were single. Almost 43.3% had a family history of stroke while 50% have experience in taking care of stroke patients. The results highlighted that nursing students have good stroke knowledge with a mean score of 13.17 ( $\pm 2.20$ ) but a moderate score for information needs on stroke [125.83 ( $\pm 15.62$ )].

**Conclusion:** Overall, nursing students showed that they have better knowledge regarding stroke disease but require further information on stroke-related nursing skills. This is in lieu of the diversity of stroke and its subtype which affect different nursing care needed.

**Keywords:** Stroke knowledge, Information needs, Students, Preliminary study

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## INTRODUCTION

Stroke is a clinical syndrome characterised by rapidly increasing clinical symptoms and/or indicators of focal, loss of cerebral function with symptoms lasting more than 24 hours or leading to death, and no evident explanation other than the vascular origin (1). Ischaemic stroke accounts for 79.4% of all stroke cases followed by haemorrhagic stroke (18.2%), transient ischaemic attack (2%), and unclassified stroke (0.4%) (1). The most frequent risk factors are hypertension (72%), diabetes mellitus (47%), dyslipidaemia (32%), and smoking (31%) (1). In 2013, almost 25.7 million stroke survivors, 6.5 million stroke fatalities, 113 million disability-adjusted life-years (DALYs) lost due to stroke, and 10.3 million new cases of stroke were reported globally (2). In addition, The Department of Statistics, Malaysia also addressed that stroke emerged as one of the top five leading causes of mortality since 2000 (1).

Stroke is one of the most recognisable diseases among the Malaysian community. However, due to the lack of exposure to stroke nursing care, nursing students may not have adequate skills in managing stroke patients. Therefore, they need to have adequate knowledge about stroke, however, the curriculum only covers superficial information about the disease in theory and practical aspects. A previous study in Bangladesh highlighted that there is still a lack of awareness of stroke and its management among undergraduate nursing students (3).

Post-stroke care is essential to improve outcomes for both patients and families. However, limited skills and competence among healthcare professionals, as well as low levels of awareness and knowledge due to poor educational support for staff, represent barriers to optimal evidence-based practice in stroke care (4). Lack of competency is not only addressed among students, but nurses also face limited expertise in oral care and stroke-specific skills as barriers to implementing water protocols in acute stroke care (5). In addition, several studies demonstrated that nurses did not have adequate knowledge and skills to screen and treat dysphagia in post-stroke patients and require additional training (6, 7). Thus, nursing students should be prepared with adequate knowledge and skills to take

care of stroke patients in the future. Currently, there is no exact consensus regarding stroke level of knowledge and information needs among nursing students from the International Islamic University Malaysia (IIUM). Therefore, this study aims to determine the level of stroke knowledge and information needs among Kulliyyah of Nursing (KON) students. Since this is a preliminary study, thus there is no assumption required and all data obtained provide baseline information on these two outcomes of interest.

## METHODS

### Population and Setting

A cross-sectional study was conducted on May 2022 among KON, IIUM students to measure their knowledge level and informational needs on stroke. The current study was approved by the Kulliyyah of Nursing Postgraduate Research Committee (KNPGRC) and IIUM Research Committee (IREC)-ID: IREC 2022-KON/59.

### Inclusion and exclusion criteria

The inclusion criteria were senior undergraduate students of KON, IIUM and willing to participate in the study. The exclusion criteria were students from other Kulliyyah. Students who met inclusion criteria were approached and consent was obtained.

### Research Instrument

A set of questionnaires in Malay language consisting of three parts were adopted from previous studies conducted in Hospital Universiti Sains Malaysia, Kelantan (8, 9). Part A consists of the socio-demographic background information of the respondents including age, gender, year of study, current residency area, marital status, family history of stroke, and experience in taking care of stroke patients. Next, Part B consists of 20 multiple choice questions (MCQ) on stroke disease to measure the knowledge domain. Each correct answer was given one (1) mark and the wrong answer received a zero (0) mark. A total score between 0 to 9 is considered poor knowledge while a score of more than 10 is considered good knowledge.

Part C contains 48 items: 1) general information (17 items) and 2) specific information; (i)

community service (1 item), (ii) practical aid (17 items) and (iii) information, advice and supports need for stroke patients (12 items). All of the items to measure the informational needs domain are in the form of a Likert Scale: *Sangat Perlu* (3), *Perlu* (2), and *Kurang Perlu* (1).

### Sample size and data collection procedure

A total of 30 respondents from year 4 nursing students were involved in the preliminary study. The undergraduate students were conveniently selected during recruitment. Potential recall bias may happen, but researcher assumed the students have pre-requisite knowledge on stroke and clinical experience that may reduce this issue. The researcher explained the procedure using the prepared information sheet and consent was taken once the respondents agreed to participate. The researcher then directly distributed the questionnaire to the students and sometimes require assistance from the class representative. Ample time was given to the respondents to answer the questionnaire.

### Data analysis

IBM Statistical Package Social Science (SPSS) version 27 was used to analyse and manage all data. Quantitative variables were expressed as mean and standard deviation. Meanwhile, the categorical variables were expressed as percentages and frequency.

### Conceptual Framework

Wilson's model 1981 (10) proposed that information-seeking behaviour develops in stages or sequences as a result of a need perceived by an information user. To meet that need, the user makes demands on formal or informal information sources or services. These information demands result in the success or failure to find relevant information. If the outcome is successful, the individual will use the information to either fully or partially satisfy the perceived need. Thus, the model helps in determining the level of stroke knowledge and information needs of students at KON, IIUM.

## RESULTS

### Socio-demographic Background of the Respondents

The number of respondents who participated in this study was 30 undergraduate nursing students (Table 1). Most of the respondents were female (96.7%), mean age of 23.23 ( $\pm$  0.68) years old, from Mahallah Ummu Kalthum (MUK) residential area (96.7%), and single (93.3%). Majority of them had no family members having a stroke (56.7%) while 50% of them have experience taking care of stroke patients.

**Table 1:** Sociodemographic data of nursing students at IIUM (n = 30)

Variables	Frequency (%)	Mean (SD)
Age		23.23
Gender		(0.68)
Male	1 (3.3)	
Female	29 (96.7)	
Year of study		
Fourth year	30 (100.0)	
Residential Area in IIUM		
Mahallah KAW	1 (3.3)	
Mahallah UK	29 (96.7)	
Marital Status		
Married	1 (3.3)	
Engaged	1 (3.3)	
Single	28 (93.3)	
Having family members with stroke		
No	17 (56.7)	
Yes	13 (43.3)	
Having experienced taking care of patient with stroke		
No	15 (50.0)	
Yes	15 (50.0)	

\*KAW = Mahallah Khalid Al Walid, UK = Mahallah Ummu Kalthum

### Level of stroke knowledge

Table 2 highlights the descriptive analysis of the knowledge domain. The total score (numerical) for all seven items was 3.65 $\pm$ 1.12 with almost half (43.5%) of the respondents having poor knowledge. Overall, nursing students have a good level of stroke knowledge with a mean score of 13.17 ( $\pm$ 2.20). Furthermore, 93.3% of the students answered questions 1, 10, and 13 correctly while 90% of them answered question 7, 14, and 19 correctly. Majority of the respondents wrongly answered questions 3 (83.3%), 4 (66.7%), 6 (63.3%), and 18 (83.3%). The lowest score obtained is 9 whilst the highest is 17. For details of the answer, readers may contact the authors since the

instrument was copyrighted and has been published in another publication (8).

**Table 2:** Stroke knowledge test output of nursing students at IIUM (n=30)

Item	Description	Frequency (%)	
		Right	Wrong
MCQ 1	The most common type of stroke occurs when (Ans: The blood supply to the brain is blocked*)	28 (93.3)	2 (6.7)
MCQ 2	Which of the following will double your risk of stroke? (Ans: If you are diabetic*)	24 (80.0)	6 (20.0)
MCQ 3	A type of irregular heartbeat known as atrial fibrillation (AF) (Ans: Increases the risk of stroke by 5 times*)	5 (16.7)	25 (83.3)
MCQ 4	Which age group is more at risk of stroke? (Ans: more than 61 years*)	10 (33.3)	20 (66.7)
MCQ 5	The warning signs of a transient ischaemic attack (TIA) disappear _____ (Ans: Within 24 hours*)	20 (66.7)	10 (33.3)
MCQ 6	Which of the following is a warning sign of stroke? (Ans: All of the above*)	11 (36.7)	19 (63.3)
MCQ 7	For someone who has had a stroke, the main purpose of rehabilitation is to _____ (Ans: Improve their level of daily functioning*)	27 (90.0)	3 (10.0)
MCQ 8	Taking aspirin assists in preventing stroke by _____ (Ans: Stopping the formation of blood clots*)	26 (86.7)	4 (13.3)
MCQ 9	You are at greater risk of having a stroke if _____ (Ans: You are obese*)	26 (86.7)	4 (13.3)
MCQ 10	Once you have suffered a Transient Ischaemic Attack (TIA) (Ans: You are more likely to have a major stroke*)	28 (93.3)	2 (6.7)
MCQ 11	Surgery can sometimes help to prevent another stroke by _____ (Ans: Unblocking the arteries in the neck*)	24 (80.0)	6 (20.0)
MCQ 12	What method of treatment is available for people who have had a stroke? (Ans: All of the above*)	21 (70.0)	9 (30.0)
MCQ 13	One of the major risk factors of stroke is _____ (Ans: High blood pressure*)	28 (93.3)	2 (6.7)
MCQ 14	Approximately how many Malaysians are affected by stroke every year? (Ans: 50,000*)	27 (90.0)	3 (10.0)
MCQ 15	If you drink alcohol excessively you are _____ (Ans: Twice as likely to suffer stroke*)	17 (56.7)	13 (43.3)
MCQ 16	Which of the following is classed as a physical disability caused by stroke? (Ans: The right arm is paralysed*)	18 (60.0)	12 (40.0)
MCQ 17	To reduce the risk of stroke you need to _____ (Ans: All of the above*)	21 (70.0)	9 (30.0)
MCQ 18	Smoking 20 cigarettes per day increases the risk of stroke by _____ (Ans: 6 times*)	5 (16.7)	25 (83.3)
MCQ 19	If someone has a stroke, when should ring for an ambulance? (Ans: Always ring for an ambulance straight away*)	27 (90.0)	3 (10.0)
MCQ 20	Rehabilitation can assist someone who has suffered _____ (Ans: All of the above*)	26 (86.7)	4 (13.3)

**Information needs on stroke**

Table 3 shows the information needs domain of the respondents regarding stroke. The mean obtained was 125.83 ( $\pm 15.62$ ) indicating a moderate score. For general information, 83.3% of the respondents agreed that medication, follow-up, and the role of the family members were important for stroke patients. Meanwhile, for the community services component, 83.3% acknowledged that stroke patients need home care assistance. Besides that, in practical aid

majority (80.0%) agreed that muscle exercise was important for stroke patients. On the other hand, 76.7% of the respondents stated that the bathing method, independent movement, walking frame, pain management, and communication assistance were vital for stroke patients. Lastly, for the information, advice and support component, 80% of the nursing students agreed that taking medication, follow-up, and floor and toilet safety is important information that is needed.

**Table 3:** Information needs output regarding stroke of nursing students at IIUM (n=30)

Information needs	Frequency (%)		
	Strongly Need (3)	Need (2)	No Need (1)
<b>General information</b>			
1.1 Definition of stroke	18 (60.0)	12 (40.0)	0 (0.0)
1.2 Classification of stroke	19 (63.3)	11 (36.7)	0 (0.0)
1.3 How stroke attack	22 (76.3)	8 (26.7)	0 (0.0)
1.4 Risk factors of stroke	24 (80.0)	6 (20.0)	0 (0.0)
1.5 Complication of stroke towards patient			
1.5.1 Physical	22 (76.3)	8 (26.7)	0 (0.0)
1.5.2 Communication	23 (76.7)	7 (23.3)	0 (0.0)
1.5.3 Behavioral changes	23 (76.7)	7 (23.3)	0 (0.0)
1.5.4 Prevention of recurrent stroke	23 (76.7)	7 (23.3)	0 (0.0)
1.5.5 Swallowing abilities	24 (80.0)	6 (20.0)	0 (0.0)
1.5.6 Rehabilitation	24 (80.0)	6 (20.0)	0 (0.0)
1.5.7 Problems with bladder control	23 (76.7)	7 (23.3)	0 (0.0)
1.5.8 Changes of taste	23 (76.7)	7 (23.3)	0 (0.0)
1.6 Awareness and lifestyle modification			
1.6.1 Low cholesterol food	23 (76.7)	7 (23.3)	0 (0.0)
1.6.2 Regular exercise	24 (80.0)	6 (20.0)	0 (0.0)
1.6.3 Medication	25 (83.3)	5 (16.7)	0 (0.0)
1.6.4 Follow-up	25 (83.3)	5 (16.7)	0 (0.0)
1.7 Role of caregiver	25 (83.3)	5 (16.7)	0 (0.0)
1.8 Discharge plan	21 (70.0)	8 (26.7)	1 (3.3)
<b>Specific information</b>			
<b>2. Community service</b>			
2.1 Home care service assistance	25 (83.3)	5 (16.7)	0 (0.0)
<b>3. Practical Assistance</b>			
<b>3.1 Personal hygiene technique</b>			
3.1.1 Taking bath in the toilet	23 (76.7)	7 (23.3)	0 (0.0)
3.1.2 Bed bath	22 (73.3)	8 (26.7)	0 (0.0)
<b>3.2 Positioning technique</b>			
3.2.1 Sitting (Fowler)	20 (66.7)	10 (33.3)	0 (0.0)

Information needs	Frequency (%)		
	Strongly Need (3)	Need (2)	No Need (1)
3.2.2 Semi-sitting (Semi-fowler)	20 (66.7)	10 (33.3)	0 (0.0)
3.2.3 Laying down (Recumbent)	21 (70.0)	9 (30.0)	0 (0.0)
3.2.4 Side laying (Lateral)	21 (70.0)	9 (30.0)	0 (0.0)
3.3 Changing position			
3.3.1 Lying down to side-laying	21 (70.0)	9 (30.0)	0 (0.0)
3.4 Lung exercise			
3.4.1 Deep breathing technique	20 (66.7)	9 (30.0)	1 (3.3)
3.5 Physical exercise			
3.5.1 Range of motion	23 (76.7)	7 (23.3)	0 (0.0)
3.5.2 Muscle exercise	24 (80.0)	6 (20.0)	0 (0.0)
3.6 Walking technique			
3.6.1 Walking stick	22 (73.3)	8 (26.7)	0 (0.0)
3.6.2 "Walking frame"	23 (76.7)	7 (23.3)	0 (0.0)
3.6.3 Wheelchair	22 (73.3)	7 (23.3)	1 (3.3)
3.7 Pain management	23 (76.7)	7 (23.3)	0 (0.0)
3.8 Communication Aid	23 (76.7)	7 (23.3)	0 (0.0)
3.9 Feeding and catheter care			
3.9.1 Oral	21 (70.0)	8 (26.7)	1 (3.3)
3.9.2 Tube	22 (73.3)	7 (23.3)	1 (3.3)
<b>4. Information, advice and support</b>			
4.1 Medication regime	24 (80.0)	6 (20.0)	0 (0.0)
4.2 Follow-up visit	24 (80.0)	6 (20.0)	0 (0.0)
4.3 Safety in the house			
4.3.1 Floor	24 (80.0)	6 (20.0)	0 (0.0)
4.3.2 Toilet	24 (80.0)	6 (20.0)	0 (0.0)
4.4 Stroke association	20 (66.7)	9 (30.0)	1 (3.3)
4.5 Request for education aid	17 (56.7)	10 (33.3)	3 (10.0)
4.6 Counselling	22 (73.3)	8 (26.7)	0 (0.0)
4.7 Financial aid	21 (70.0)	8 (26.7)	1 (3.3)
4.8 Leave	19 (63.3)	10 (33.3)	1 (3.3)
4.9 Job	20 (66.7)	10 (33.3)	0 (0.0)

## DISCUSSION

The current study was conducted among undergraduate nursing students of IIUM. The mean age of the students was 23.23 ( $\pm 0.68$ ) years old, female, in the fourth year, and single. Students in this study are considered older compared to previous studies which were conducted among high school and medical students (11,12). However, our participants are

comparable with the second-year nursing students in India (13). At that point of data collection, our students were residing in the university facilities known as Mahallah Ummu Kalthum (96.7%) situated in the city of Kuantan, Pahang, Malaysia. Similarly, most of the respondents in Kathmandu, Nepal and Michigan, United States were from the urban area (12, 14). Our nursing students claimed that they did not have family members with stroke

unlike findings reported in previous research (11, 13, 15-16). Only 50% of our nursing students reported having experience in taking care of a stroke patient compared to the 70% of nursing students in India even in their second year in the Bachelor of Nursing program (13). Perhaps, some restrictions during the COVID-19 pandemic limited the respondents to encounter stroke patients since different priority was emphasised.

Our nursing students attained good stroke knowledge with a mean score of 13.17 ( $\pm 2.20$ ), which is higher than the mean score of 8.44 ( $\pm 2.98$ ) in the earlier study of one of the authors (8). However, caution is needed for the interpretation since the background of the students and patients was different due to knowledge exposure to the disease as addressed by a previous author (17). Nevertheless, our nursing students have better stroke knowledge compared to a study from Pakistan (16). The researcher reported that their students' knowledge was inadequate in certain domains of stroke diagnosis and management (16). It is important to increase the knowledge regarding stroke among students to improve the quality of stroke care and reduce the global burden of a stroke while (18).

For the knowledge domain, our nursing students agreed that rehabilitation (90%) and a healthy lifestyle (70%) reduce the occurrence of stroke similar to findings from previous studies (12-14). The current nursing students acknowledge that increased intake of alcohol (56.7%) is one of the risk factors for stroke and not atrial fibrillation. Meanwhile, only 36.7% of our students recognised sudden blurred vision, paralysis on one side of the body, and severe headaches as warning signs of stroke. These results are similar to those addressed by the high school and undergraduate medical entrance students from previous studies (12, 14). A similar pattern was also observed among community pharmacists in France after multivariate analyses. The study shows that pharmacist at shopping centres was 5.2 times more likely (95% CI 1.3-19.8) than pharmacist in the urban area to have better knowledge score on stroke warning signs (19). Thus, maturity and clinical experience may influence one's knowledge of stroke disease.

In terms of treatment, our nursing students showed a good understanding of the role of medication in preventing stroke, which is not reflected well among students in the previous studies (12, 16). Perhaps, the role of clinical exposure and year of study have some influence on the degree of knowledge in relation to medication and managing clients with stroke based on their medical morbidities.

The discussion for information domains was based on the general and specific information needed by our nursing students. The results showed a moderate level of information needs on stroke by our nursing students as they attained a mean score of 125.83 ( $\pm 15.62$ ), which is less than the 50th percentile score of 134.00. A study in Thiruvalla Kerala reported that their nursing students showed poor knowledge and practice regarding chair exercise for hemiplegic patients during in pre-test (13). On the contrary, 80% of our nursing students agreed that muscle exercise was important to improve muscle strength. Besides, they strongly need (80%) the information on stroke rehabilitation as emphasised by (20) that comprehensive nursing rehabilitation programme was highly effective in improving the quality of life among stroke patients. Furthermore, they felt the need for information on the role of the caregiver as highlighted by another study on the importance of proper training for those taking care of stroke patients (21). This is important since our nursing students will be indirect caregivers when they are posted in the clinical setting.

Moreover, our nursing students addressed the importance of lifestyle modification information. A study emphasised the need for the continuation of proper exercise training to improve the upper limb motor coordination of hemiplegic patients, particularly when they were discharged home (22). Interestingly, the researcher also found that pain was not correlated with the ability to perform daily tasks which refrained the stroke patients from being active and being in-charged of their daily activities (22). Thus, it shows that a proper discharge plan that involved follow-up, proper exercise, and medication during rehabilitation is as perceived important by our nursing students.

A study performed in Georgia, the United States of America among occupational therapy students and practitioners addressed similar issues regarding having teleconferences as a mechanism for stroke patients and their caregivers not to miss their follow-up during rehabilitation (23). This approach was believed to be the latest healthcare enhancement to reduce the burden of the caregiver, reduce cost, and at the same time empower stroke patients to be independent in their daily activities (23).

In regard to practical assistance, our nursing students addressed the need for information on personal hygiene, feeding, and catheter care. A previous study addressed the lack of curriculum design on acute stroke care even in the Degree/Bachelor of the nursing syllabus. Thus, the confidence level among nurses in performing oral care, water protocol, and monitoring of aspiration among patients was addressed by several studies (5, 7). Taking care of stroke patients is a real challenge since they cannot be independent based on the degree of stroke severity. However, as the nurses become more experienced, these routines were no longer a burden after the improvement of skills through training (5, 7).

In our study, the nursing students perceived the importance of having information on feeding and catheter care since they were trained during their second year of our nursing program. Failure in ensuring client safety throughout feeding will lead to aspiration and risk for pneumonia infection as addressed by (24). A study suggested using simulation with pre-prepared scenarios followed by proper psychomotor assessments for evaluation consisting of several intervals (2-, 4- and 6-weeks interval) to train nurses to be competent at performing swallowing screening (6).

Using simulation as an innovative approach in curriculum design in teaching the nurses and students may provide immediate feedback and increase comfortable dealing with the non-life-threatening event, particularly among novice nurses. Furthermore, applying simulation also improved nursing students' confidence level and learning satisfaction when communicating and dealing with stroke patients (25,26). This is addressed by almost 80% of our current nursing students who need information on

communication aid due to limited exposure to caring for stroke patients.

On the other hand, our nursing students have similar thoughts that educational information on stroke should have a variety of delivery either through reading, support and counselling from healthcare professionals, and involvement of the community support group. These choices are highlighted in several studies on stroke patients or their family members whereby an interactive approach that leads to self-care was encouraged (12, 14, 17, 19, 23). For instance, engaging high school students from the region with high case of stroke together with medical students, doctors, and teachers in a school-based intervention were a significant approach to addressing stroke awareness (18, 23, 27). Other than that, using teleconferences, videos (pre-recorded and YouTube), web-based approach, and interactive stations with the healthcare professional students provide platforms as a role model of good behaviour throughout rehabilitation, especially in exercising and dietary intake (18, 23, 28).

Lastly, we would like to highlight the strength of this study, which provides vital implications for health education on stroke in Malaysia because the awareness and knowledge levels of our university students are still limited. As mentioned in the discussion, the lack of clinical exposure in taking care of stroke patients may have some contribution. Nevertheless, we do have some limitations in this study such as a lack of generalisability and sampling bias issues since it was only a pilot study conducted at a single university. Thus, we would like to recommend that the study is replicated at a larger sample size with the involvement of different universities to investigate the whole Malaysian undergraduate students' knowledge and awareness about stroke.

## CONCLUSION

We concluded that the nursing students may have good theoretical knowledge of stroke but still have a lack of understanding of how to manage stroke patients particularly when they have lack clinical exposure. Therefore, almost half of them felt the importance of having information on stroke risk factors, warning signs, rehabilitation, feeding and catheter care, follow-up, discharge plan, and communication



although they are in their final year of study. This concern not only occurs among students alone since the need for knowledge and information seeking is also addressed among those working as healthcare professionals. With the increasing trend of stroke occurrence, more awareness campaigns, health education, and blended learning strategy in the curriculum should be emphasised in clinical settings and teachings, which may help to retard the progress of the disease.

#### CONFLICT OF INTEREST

The authors declare they have no conflict of interest in this study.

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#### AUTHOR CONTRIBUTIONS

**SNS:** manuscript preparation.

**SAMS & NHHH:** Data collection and manuscript preparation.

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