

The emerging role of respiratory physiotherapy: A profile of the attitudes of nurses and physicians in Saudi Arabia

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Abstract:

CONTEXT: Respiratory physiotherapy plays a key role in the management and treatment of patients with respiratory diseases worldwide, yet this specialty is not well established in Saudi Arabia.

AIMS: To profile the attitudes among physicians and nurses toward physiotherapists working in respiratory care settings in Saudi Arabia.

METHODS: A cross-sectional questionnaire-based study was conducted. A questionnaire was developed consisting of 23 items, which was distributed both electronically and in paper form to physicians and nurses working in hospitals and health-care centers in Saudi Arabia. Physicians and nurses working outside of Saudi Arabia, and other health professionals, were excluded from the study.

RESULTS: A total of 284 questionnaires were returned (nurses: $n = 158$; physicians: $n = 126$). The majority believed that physiotherapists have the skills to be involved in respiratory care (79.9%, $n = 226$) and that physiotherapists are an important member of the Intensive Care Unit team (90.4%, $n = 255$). Most respondents ($n = 232$, 82.9%) felt in need of more information regarding the role of physiotherapy within respiratory care; significantly more nurses than physicians believed they needed additional education ($P = 0.002$). Specialized physicians were more likely than nonspecialized physicians to refer respiratory patients to physiotherapy ($P < 0.05$).

CONCLUSION: Physiotherapy in respiratory care settings was positively regarded by nurses and physicians working in hospitals and health-care facilities in Saudi Arabia. The need for further education for physicians and nurses on the role of physiotherapy in respiratory care was highlighted; this would enable physiotherapy to develop and be further integrated into the respiratory care multidisciplinary team.

Key words:

Intensive Care Units, nursing, physical therapy specialty, physician, respiratory care, Saudi Arabia

Globally, the physiotherapy profession plays an integral part in the health-care system contributing to many medical specialties, such as musculoskeletal, neurology, and cardiopulmonary care.^[1] In Saudi Arabia, the physiotherapy profession is a relatively new discipline; the Saudi Physical Therapy Association joined the World Confederation for Physical Therapy in 2003 and had 343 registered members in 2015. The standards of physiotherapy practice are poorly defined; however, physiotherapists follow the codes of conduct of regulatory and licensing authorities such as the Saudi Health Commission and the Saudi Physical Therapy Association.^[2] Unlike in countries such as the United States or the United Kingdom, direct access to physiotherapy is not permitted in Saudi Arabia.^[3] Nevertheless, over one million children and adults received physiotherapy at medical rehabilitation centers in Saudi Arabia in 2013.^[4]

Respiratory diseases are considered among the leading causes of mortality throughout the

world.^[5,6] Respiratory physiotherapy is a core specialty within the physiotherapy profession and plays a key role in the management and treatment of patients with respiratory diseases.^[7,8] A variety of interventions, including pulmonary rehabilitation, early mobilization, and airway clearance techniques, have demonstrated beneficial effects on the symptoms associated with respiratory diseases. These include

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enhanced pain management, sputum clearance and cough efficacy, reduced dyspnea, and improved physical fitness.^[7] Positive effects have been demonstrated in functional ability and reduced intensive care and hospital stay, with savings in associated health-care costs.^[8] Physiotherapists specializing in respiratory care work in a variety of settings including Intensive Care Units (ICUs), hospital wards, and primary care settings.^[7-9]

The evolving demands of respiratory care have prompted increased specialization and the emergence of respiratory therapists (RTs) in some countries.^[10,11] In Saudi Arabia, as in the United States and Canada, RTs work as a part of the multidisciplinary team caring for individuals with respiratory conditions. RTs undergo specialist training in respiratory care and upon registration with a national board are involved in both critical and subacute care, although the majority work in ICUs.^[11] Although patient outcomes and cost of care improve when respiratory care services are provided by qualified RTs, figures from 2011 suggested that only 21% of hospitals in Saudi Arabia provided respiratory care services involving RTs reflecting, in part, a shortage of qualified RTs.^[11] In other countries, such as the United Kingdom and Ireland, “respiratory physiotherapy” has developed as a specialization which performs a role similar to that fulfilled by RTs in respiratory care teams and is considered an important part of the multidisciplinary respiratory care teams.^[12] In addition to “chest physiotherapy,” - a role which includes the management of individuals with excessive airway secretions, maximizing oxygenation, improving lung volume, preserving musculoskeletal function, and providing advice and education to patients and their carers - respiratory physiotherapists draw from the wider scope of their training to play an integral role in early mobilization, exercising, and muscle retraining of people across the spectrum of respiratory conditions.^[9,12-14]

In Saudi Arabia, “respiratory physiotherapy” is not an established specialty.^[15] However, given the multidisciplinary respiratory care model used in other countries, this study aimed to profile the attitudes toward physiotherapists working in respiratory care settings among physicians and nurses working in Saudi Arabian hospitals and health-care centers. Secondary objectives of the study were to: (1) compare the attitudes of physicians and nurses toward physiotherapy in respiratory care, (2) identify factors that influence the attitudes of physicians and nurses toward physiotherapists working in respiratory care settings, and (3) evaluate physicians’ referrals of respiratory patients to physiotherapy.

Methods

Study design, eligibility, and recruitment

A cross-sectional, questionnaire-based approach was used in this study, with data collection conducted between May 2015 and August 2015. In Saudi Arabia, the study was approved by the Ministry of Health, and by the Local Ethics Committees of King Fahad Medical City, Riyadh, and Qatif Central Hospital, Eastern Province. Ethical approval was granted in Ireland by the Research Ethics Committee of Trinity College Dublin, the University of Dublin.

The Ministry of Health of Saudi Arabia provided a facilitation letter outlining the study to hospitals and health-care centers in

Saudi Arabia. Gatekeepers at individual institutions distributed a link to an electronic version of the questionnaire. The study was further promoted through relevant professional and social media networks. The Local Ethics Committee of Qatif Central Hospital in the Eastern Province Saudi Arabia requested that paper-based questionnaires be used; in this instance, a paper version of the questionnaire was distributed through a gatekeeper. Physicians (including interns and residents) and nurses working in hospitals or health-care centers in Saudi Arabia were eligible for inclusion in the study. Exclusion criteria were: (1) physicians and nurses working outside of Saudi Arabia, and (2) other health professionals.

Questionnaire

In the absence of any suitable questionnaires on the topic, an English language questionnaire was developed by a physiotherapist with experience of the education and health-care systems of Saudi Arabia. This questionnaire was independently reviewed and refined by both an academic physiotherapist and a respiratory physiotherapist. The questionnaire was then translated into Arabic by a native speaker. Both English and Arabic versions of the questionnaire underwent minor changes when reviewed by the Research Ethics Committees; amendments were to ensure the anonymity of respondents. Paper and electronic versions were developed (SurveyMonkey Inc., Palo Alto, USA). No formal piloting was conducted.

The first section of the questionnaire was a single-item consent form; completion of this section was mandatory for inclusion in the study. The questionnaire consisted of 23 items. The first ten items enquired about demographics (nationality), education (graduating university and postgraduate education), and profession (title and grade, specialization, clinical experience and overseas experience). The subsequent five items related to physiotherapy practice in respiratory care settings; three questions evaluated the general awareness of respondents regarding physiotherapy involvement in respiratory care. Two questions examined the physiotherapy involvement in intensive care settings. The next three items, to be completed by physicians only, evaluated the frequency of physician referral to physiotherapy services. The following item focused on ten specific respiratory conditions and symptoms and sought to determine whether or not respondents agreed that physiotherapy contributed to their treatment. The final items of the questionnaire enquired about how respondents felt their training relating to respiratory physiotherapy, and whether they believed they would benefit from further education about respiratory physiotherapy.

Statistical analysis

Statistical analyses were performed using SPSS for Windows version 22 (IBM, Armonk, NY, USA). Categorical data were reported as frequency and percentage (*n*, %). Descriptive statistics were used to describe respondent characteristics. Group differences (between physicians and nurses) were examined by Chi-square tests for categorical variables. Associations were tested using a series of binomial logistic regression models between demographic or professional factors and attitudes toward physiotherapists working in respiratory care settings; the effects that job (nurse/physician), specialization (specialist/nonspecialist), nationality (Saudi/

non-Saudi), years of experience (<10 years/>10 years), postgraduate education (yes/no), employment sector (public/private), or previous overseas training/work (yes/no) had on agreement “that physiotherapists have the skills to be involved in respiratory care,” or agreement “that the physiotherapist is an important member within the ICU team” were reported as odds ratios (and 95% confidence interval) of the independent variables. For all analyses, $P < 0.05$ (two-tailed) was taken as statistically significant.

Results

Data collection

A total 532 questionnaires were returned (electronic, $n = 476$, 89.5%; paper, $n = 56$, 10.5%). Of the 532 questionnaires, 313 (58.8%) were complete or 219 (41.1%) were incomplete. Twenty-nine questionnaires were excluded because consent was not obtained ($n = 19$) or because they were completed by professionals other than physicians and nurses ($n = 10$). In total, 284 completed questionnaires were included in the analysis [Figure 1].

Respondent characteristics

The majority of the respondents were of Saudi nationality ($n = 241$, 84.9%). Over half of the respondents were nurses ($n = 158$, 55.6%) and 126 (44.4%) were physicians. The majority were employed in the public sector ($n = 255$, 90.4%). Half of the respondents reported specialization ($n = 144$, 50.7%); a significantly higher percentage of specialization was reported among physicians than nurses (68.0% vs. 39.9%; $P < 0.0005$). The majority of respondents had <10 years clinical experience (<5 years: $n = 135$, 47.5%; 5–10 years: $n = 68$, 23.9%;

>10 years: $n = 81$, 28.5%); significantly more physicians than nurses had >10 years of experience (35.7% vs. 22.8%, $P < 0.026$). Significantly more physicians than nurses had completed postgraduate studies (54.8% vs. 14.9%, $P < 0.0005$); overall, a third of respondents (32.9%) had completed postgraduate studies. Eighty-three respondents (29.6%) had studied or trained overseas, with significantly more physicians than nurses having gained international experience (46.0% vs. 16.2%; $P < 0.0005$). Respondent characteristics are summarized in Table 1.

Perception of physiotherapists working in respiratory care settings

Eighty percent of participants ($n = 226$) believed that physiotherapists have the skills to be involved in respiratory care, while forty respondents (14.1%) did not ($n = 17$, 6.0% “did not know”) [Table 2]. Most of the participants ($n = 255$, 90.4%) said they agreed that physiotherapists are an important member of the ICU team; there were no significant differences in responses between nurses and physicians ($P > 0.05$). Of the 27 respondents who disagreed with or did not know about physiotherapist participation within ICU teams, thirteen (48.4%) reported not knowing the role of physiotherapists in that setting. No significant associations between demographic or professional factors and agreement “that physiotherapists have the skills to be involved in respiratory care” or agreement “that the physiotherapist is an important member within the ICU team” were identified in logistic regressions [Supplementary Table 1].

Professional education

The majority of respondents ($n = 232$, 82.9%) felt that they were in need of more information regarding the role of physiotherapy within respiratory care; significantly more nurses ($n = 138$, 89.0%) than physicians ($n = 94$, 75.2%) believed they needed more information ($P = 0.002$) [Table 2]. Three-quarters of participants ($n = 213$, 76.1%) reported receiving insufficient information regarding the role of respiratory physiotherapy during their training; there were no differences in responses between physicians and nurses ($P > 0.05$).

Physician referral to physiotherapy

Of the 126 physicians in this sample, 40.8–45.2% reported always referring their respiratory patients to physiotherapy, across different settings [Table 3]. A comparison of the referral rates between specialized and nonspecialized physicians found that specialized physicians were more likely to refer patients with postoperative respiratory conditions or with airway obstructions in ICU to physiotherapists working in respiratory care settings.

Attitudes to physiotherapy in the management of respiratory conditions

Table 4 summarizes the respondent agreement that physiotherapy has a role in the management of specified respiratory conditions and symptoms. The highest agreement was for “rehabilitation in chronic respiratory disease” ($n = 255$, 90.1%), while the lowest percentage of agreement was for physiotherapy involvement in the treatment of “cough” ($n = 162$, 58.9%). Nurses were more likely than physicians to agree that physiotherapy contributed to the management of

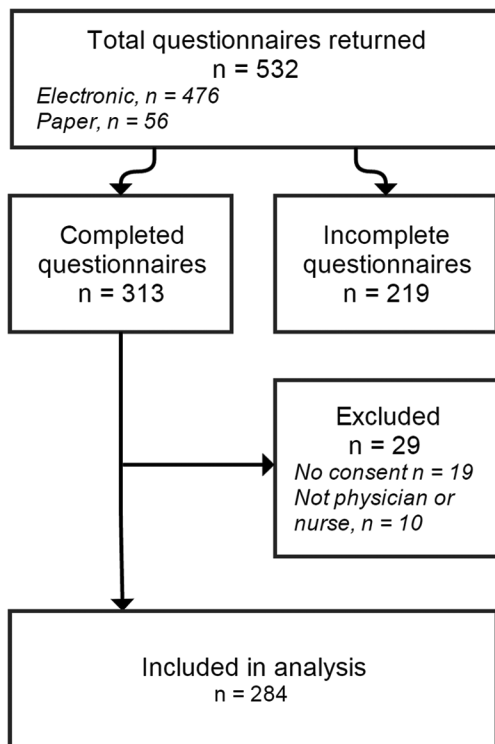


Figure 1: Summary of response to questionnaire

Table 1: Respondent characteristics

	Total (n=284)	Physicians (n=126)	Nurses (n=158)
Studied/worked outside Saudi Arabia	83 (29.6)	58 (46.0)	25 (16.2)**
Completed postgraduate studies	92 (32.9)	69 (54.8)	23 (14.9)**
Employed in public sector	255 (90.4)	117 (93.6)	138 (87.9)
Clinical experience (years)			
<5	135 (47.5)	58 (46.0)	77 (48.7)
5-10	68 (23.9)	23 (18.3)	45 (28.5)*
>10	81 (28.5)	45 (35.7)	36 (22.8)*
Specialization			
Specialized	144 (50.7)	85 (68.0)	59 (39.9)**
Nonspecialized	129 (45.4)	40 (32.0)	89 (60.1)**

*Significant difference between physicians and nurses $P<0.05$, **Significant difference between physicians and nurses $P<0.0005$

Table 2: Attitude of physicians and nurses toward physiotherapy in respiratory care settings

	Total (n=0-283)	Physicians (n=124-126)	Nurses (n=155-157)
Do you agree that physiotherapists have the skills to be involved in respiratory care?			
Agree	226 (79.9)	104 (82.5)	122 (77.7)
Disagree	40 (14.1)	16 (12.7)	24 (15.3)
Don't know	17 (6.0)	6 (4.8)	11 (7.0)
Do you agree that the physiotherapist is an important member within the ICU team?			
Agree	255 (90.4)	114 (91.2)	141 (89.8)
Disagree	20 (7.1)	10 (8.0)	10 (6.4)
Don't know	7 (2.5)	1 (0.8)	6 (3.8)
Do you feel that you need more information regarding the role of physiotherapy within respiratory care?			
Yes	232 (82.9)	94 (75.2)	138 (89.0)*
No	48 (17.1)	31 (24.8)	17 (11.0)
Did you receive enough information regarding the role of respiratory physiotherapy when you were in university/college?			
Yes	67 (23.9)	23 (18.5)	44 (28.2)
No	213 (76.1)	101 (81.5)	112 (71.8)

*Significant difference between physicians and nurses $P=0.002$. ICU = Intensive Care Unit

Table 3: Physician referral to physiotherapy in respiratory care settings

	Total (n=123-124)	Specialized (n=85)	Nonspecialized (n=38-39)
How often do you refer patients with chronic obstructive disease to physiotherapy?			
Always	51 (40.8)	37 (43.5)	14 (35.9)
Rarely	19 (15.2)	17 (20.0)	2 (5.1)
Never	16 (12.8)	10 (11.8)	6 (15.4)
Not applicable	39 (31.2)	21 (24.7)	17 (43.6)
How often do you refer patients with airways obstructions in ICU to physiotherapy?			
Always	56 (45.2)	44 (51.8)	11 (28.9)*
Rarely	17 (13.7)	13 (15.3)	4 (10.5)
Never	12 (9.7)	9 (10.0)	3 (7.9)
Not applicable	39 (31.5)	19 (22.4)	20 (52.6)
How often do you refer patients with postoperative respiratory conditions to physiotherapy?			
Always	51 (40.8)	41 (48.2)	10 (25.6)*
Rarely	21 (16.8)	15 (17.6)	6 (15.4)
Never	10 (8.0)	7 (8.2)	3 (7.7)
Not applicable	43 (34.4)	22 (25.9)	20 (33.9)

*Significant difference between specialized and nonspecialized physicians $P<0.05$. ICU = Intensive Care Unit

Table 4: Attitudes toward physiotherapy in the management of respiratory conditions and symptoms

	Total (n=275-283)			Physician (n=122-126)			Nurses (n=153-158)		
	A	D	DK	A	D	DK	A	D	DK
Condition									
Rehabilitation in chronic respiratory diseases	255 (90.1)	12 (4.2)	16 (5.7)	115 (91.3)	4 (3.2)	7 (5.6)	140 (89.2)	8 (5.1)	9 (5.7)
Mobilization after critical illness	245 (86.9)	20 (7.1)	17 (6.0)	113 (90.4)	8 (6.4)	4 (3.2)	132 (84.1)	12 (7.6)	13 (8.3)
Postoperative respiratory conditions	238 (84.1)	29 (10.2)	16 (5.7)	108 (85.7)	10 (7.9)	8 (6.3)	130 (82.8)	19 (12.1)	8 (5.1)
COPD	229 (81.5)	23 (8.2)	29 (10.3)	105 (83.3)	10 (7.9)	11 (8.7)	124 (80.0)	13 (8.4)	18 (11.6)
Asthma	213 (75.3)	49 (17.3)	21 (7.4)	94 (74.6)	22 (17.5)	10 (7.9)	119 (75.8)	27 (17.2)	11 (7.0)
Pulmonary fibrosis	212 (74.9)	33 (11.7)	38 (13.4)	98 (78.4)	14 (11.2)	13 (10.4)	114 (72.2)	19 (12.0)	25 (15.8)
Cystic fibrosis	195 (68.9)	36 (12.7)	5 (18.4)	100 (79.4)*	12 (9.5)	14 (11.1)*	95 (60.5)*	24 (15.3)	38 (24.2)*
Symptom									
Sputum	236 (83.4)	35 (12.4)	12 (4.2)	104 (82.5)	18 (14.3)	4 (3.2)	132 (84.1)	17 (10.8)	8 (5.1)
Breathlessness	218 (77.3)	47 (16.7)	17 (6.0)	88 (69.8)*	28 (22.2)*	10 (7.9)	130 (83.3)*	19 (12.2)*	7 (4.5)
Cough	162 (58.9)	72 (26.2)	41 (14.9)	64 (52.5)	41 (33.6)*	17 (13.9)	98 (64.1)	31 (20.3)*	24 (15.7)

*Significant difference between physicians and nurses $P < 0.05$, A = Agree, COPD = Chronic obstructive pulmonary disease, D = Disagree, DK = Do not know

cough ($P = 0.043$) and breathlessness ($P = 0.027$). Physicians were more likely than nurses to agree that physiotherapy contributed to the treatment of cystic fibrosis ($P = 0.003$).

Discussion

Main findings

This was the first study to profile the attitudes of physicians and nurses toward physiotherapists working in respiratory care settings in Saudi Arabia. Although an emerging profession in the Saudi health-care system, the majority of physicians and nurses believed that physiotherapists have the expertise to be involved in respiratory care (79.9%) and that they are an important member of the ICU team (90.4%). There was broad agreement between the professions that physiotherapy has a role to play in the management of a number of conditions and common respiratory symptoms.

Despite this favorable stance, physicians and nurses would welcome more information about the role of physiotherapy within respiratory care. Three-quarters (76.1%) of respondents did not believe they had received enough information regarding the role of physiotherapy during their formal training. Almost half (48.4%) of the respondents who did not view physiotherapists as an important member of the ICU team reported not knowing what the role of the physiotherapist was in this setting. Respondent's attitudes toward physiotherapists working in respiratory care settings did not differ between nurses and physicians. Clinical experience and specialization, educational level achieved, and international experience did not significantly influence attitudes, suggesting that other factors may influence attitudes toward physiotherapists working in respiratory care settings; future studies may explore these determinants.

A large minority of physicians responding to this study reported always referring to physiotherapy services, across a variety of respiratory cases including chronic obstructive diseases, ICU and postoperative respiratory conditions (40.8–45.2%). In the subgroup analysis of physician referral to physiotherapists working in respiratory care settings, specialized physicians were more likely to refer to physiotherapy than nonspecialists. A review of educational programs in medical universities

and postqualification training may identify opportunities to enhance the awareness and understanding of the role of physiotherapy within respiratory care among physicians and nurses.

Clinical and educational implications

The British Thoracic Society recommends that physiotherapy be an integral part of any respiratory team providing effective and practical management for the benefit of the respiratory patient.^[7] Currently, respiratory physiotherapy is not a well-identified profession within the Saudi Arabian health-care system; the traditional role of the physiotherapist in respiratory care teams has been limited to joint mobilization. The evolution of the physiotherapy profession within Saudi Arabia has not kept pace with international trends, in which physiotherapists are entrusted with increased responsibilities within the respiratory care team, across a range of clinical settings.^[3] There is evidence that this may be changing; the first pulmonary rehabilitation program in a tertiary care center in Saudi Arabia was implemented by a respiratory physiotherapist, and significant improvements in exercise performance and physical fitness were found at the conclusion of the program.^[16]

This study demonstrates that two key professions within the interdisciplinary team managing respiratory patients, physicians and nurses, are supportive of the role of physiotherapists within ICUs and subacute settings. Role enhancement – increasing the depth of a job by extending the role or skills of a particular group of workers – and role substitution – expanding the breadth of a job, by working across divides, or exchanging one type of worker for another – are the methods by which roles can evolve and become established practice.^[17] With a shortage in RTs within the health-care system in Saudi Arabia,^[11] physiotherapists offer a qualified alternative to enhance quality service provision in respiratory care. Respiratory physiotherapists must establish their identity and skill sets within the respiratory team, and delineate a clear scope of practice. This process may be complex, and will likely vary across different institutions and health-care systems.

Study limitations

Recruitment for this study was facilitated by the Ministry of Health of Saudi Arabia, with additional recruitment through

social media. While this approach was designed to reach a large number of practicing nurses and physicians, conceivably not all eligible professionals may have access to these recruitment channels. As this study was the first to explore attitudes of nurses and physicians toward physiotherapist working in the area of respiratory care, no *a priori* sample size calculation could be calculated, and the study may be underpowered. Electronic questionnaire distribution was not tracked and the number of potentially eligible respondents was unknown; consequently, a response rate was not calculated. Furthermore, a substantial number of incomplete questionnaires were returned, which were excluded from the analysis; results should be generalized cautiously. Social desirability bias is common in questionnaires-based studies;^[18] the brief introduction to the questionnaire included information about the role of respiratory physiotherapy and this may have impacted participant responses. Finally, whether or not respondents worked in institutions in which RTs also worked in respiratory care was not determined; this may be a confounding variable.

Future research

This study focused on the views of two key professions involved in the multidisciplinary management of individuals with respiratory conditions. Future studies should explore the views of other stakeholders, including hospital managers, patients, and other allied health professionals. An evaluation of the awareness of physiotherapists in Saudi Arabia as to their potential role within respiratory care would be of benefit to developing the profile of the professions. A clinical interest group within the Saudi Physical Therapy Association may assist with establishing a framework and best practice guidelines. Finally, a review of the training programs of all professions involved in multidisciplinary respiratory care may highlight opportunities for further education about the role of physiotherapist in a respiratory care setting.

Conclusion

This was the first study to evaluate the perceptions of nurses and physicians toward respiratory physiotherapists in Saudi Arabia. Physiotherapists were considered to have the expertise to be involvement in multidisciplinary respiratory care teams. Overall, while perceptions were positive, this study highlighted a self-perceived knowledge gap in terms of the role of respiratory physiotherapists among physicians and particularly nurses. It may be opportune to include education on the role of the physiotherapist as a member of the respiratory multidisciplinary team in undergraduate and specialized postgraduate programs. This would be a step toward the advancement of the role of physiotherapists specializing in respiratory care in Saudi Arabia, which might ultimately lead to better practice outcomes for respiratory patients.

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Conflicts of interest

There are no conflicts of interest.

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