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ADVOCATING FOR THE INCLUSION OF CARDIOPULMONARY RESUSCITATION EDUCATION AS A STANDALONE SUBJECT IN THE SECONDARY SCHOOL CURRICULUM IN NIGERIA: A PATHWAY TO EMPOWERING FUTURE GENERATIONS AS CONFIDENT FIRST RESPONDERS AND LIFE-SAVERS FOR A HEALTHIER NATION

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ABSTRACT

Cardiopulmonary resuscitation (CPR) is a critical life-saving skill that can significantly increase survival rates during cardiac emergencies. Despite its importance, lack of widespread CPR knowledge and training remains a significant challenge, particularly in low-resource settings like Nigeria. CPR education is inadequately integrated into secondary school curricula in Nigeria. This theoretical research aims to advocate for the inclusion of CPR education into the Nigerian secondary school system. The study sheds light on the current status of CPR education in Nigerian secondary schools, identify the challenges to its implementation, and proposes strategies for effective advocacy and policy change as a means to empower future generations as confident first responders and life-savers, contributing to a healthier Nigerian nation. Through a comprehensive review of literature and analysis of existing policies and practices, this theoretical research aspires to bridge the gap between CPR education and secondary schools in Nigeria through providing insights into the potential benefits of CPR education for secondary school students in Nigeria as well as contribute to the existing body of knowledge on CPR education to policymakers, educators, and healthcare professionals about the importance of integrating CPR education into the secondary school curriculum.

Introduction

Sudden cardiac arrest represents a significant global public health challenge, including in Nigeria, where it stands as a leading cause of death across all age groups. In the United States alone, approximately 356,000 individuals experience sudden cardiac arrest (SCA) outside hospitals annually. Unfortunately, widespread awareness and confidence in performing Cardiopulmonary Resuscitation (CPR) remain deficient. Studies have revealed significant gaps in knowledge concerning typical signs and risk factors associated with conditions like cardiac arrest and respiratory failure, as well as in administering CPR during emergencies (Enizi et al., 2016; Renter, 2018; Pivač, 2020).

In Nigeria, research by Onyeaso and Onyeaso (2019) found that students had no prior exposure to CPR skills before training, highlighting a crucial gap in preparedness

for emergencies. Their study recommended the incorporation of CPR skills training programmes into the Nigerian school system to better manage the anticipated increase in out-of-hospital cardiac arrest cases due to modernization. However, CPR education remains overlooked in Nigerian secondary school curricula, posing a significant public health concern. Without access to CPR training, individuals are ill-prepared to respond to cardiac and respiratory emergencies, leading to avoidable fatalities and long-term health consequences.

Nigeria grapples with a high burden of cardiovascular diseases, making CPR education essential for improving survival rates. Despite the urgency, CPR education is not systematically taught in Nigerian schools as a subject, nor made an issue of attention among adult individuals in communities, contributing to instances of apparently healthy individuals collapsing and succumbing before receiving medical assistance. Numerous notable figures across various sectors have fallen victim to cardiac arrest or respiratory emergencies, raising questions about whether prompt CPR intervention could have saved lives. This phenomenon spans across all age groups, genders, and societal strata. In 2023, a 16-year-old secondary school student, Kambi Yul-Edochie, son of a prominent actor, collapsed while playing football at school and could not be revived. Numerous notable figures in Nollywood, politics, and even medical professionals have met similar fates. For instance, Murphy Afolabi, a popular Yoruba actor, passed away on May 14, 2023, shortly after celebrating his 49th birthday; Peace Anviam-Osigwe suffered a fatal heart attack on January 9, 2023; Ada Ameh collapsed and died at the age of 48 in Warri; Sam Loco Efe passed away in his hotel room in Owerri in August 2011 (Odutayo, 2023); Sam Okposo died at the age of 51 on November 25, 2022, following a heart attack (Odeh, 2022); and most recently, Pope Odonwode, also known as Jnr Pope, died on March 10, 2024, after being unable to receive effective CPR when brought out of the River Niger (Vanguard, 2024). Additionally, former Governor of Bayelsa state, Diepreye Alamieyeseigha, Coach Stephen Keshi, Jide Tinubu (son of the President of Nigeria), Alhaji MKO Abiola, Sam Okwaraji (Nasiru, 2017) and others have also succumbed to cardiac arrest or respiratory emergencies. Again, it raises the same salient question of whether some of these individuals, as well as others not mentioned, could have been resuscitated if those around them at the time they suffered the attack were trained in CPR. The reverse would have been the case given American Heart Association (AHA) reports that prompt CPR initiation can amplify survival prospects twofold or even threefold post-cardiac arrest (Meaney et al, 2013 & Hasselqvist-Ax I et al, 2015). This reality, to the researcher, is a pointer that a call to revisit the curriculum is a step in the right direction, if the curriculum which places a strong emphasis on nurturing practical skills, critical thinking, and problem-solving abilities among students to prepare them to navigate real-world challenges and contribute meaningfully to society, is not achieving its optimal goal of turning out individuals who are able to provide rescue breaths when needed.

Embedding CPR training into the secondary school syllabus in Nigeria has the potential to significantly impact public health by equipping students with the skills to respond effectively to emergencies. This advocacy underscores the imperative of systematically integrating CPR education throughout secondary schools nationwide. Prompt initiation of CPR can double or even triple survival prospects post-cardiac arrest, highlighting the life-saving potential of imparting CPR skills to secondary school students who are turning out as the adults of our tomorrow. Moreover, integrating CPR into the curriculum fosters awareness of cardiovascular health and the importance of timely intervention, empowering students to act as advocates for heart health within their communities.

Conclusion

Given that educational system must be structured in such a way that it must respond to changes and needs of people or become obsolete or irrelevant, advocating for the inclusion of cardiopulmonary resuscitation within the secondary school curriculum in Nigeria is pivotal for advancing public health and endowing the forthcoming generation with life-saving proficiencies. By furnishing students with knowledge and confidence in CPR application, we foster a culture of readiness, empowering individuals to respond decisively to emergencies. Through concerted collaborative initiatives and advocacy, we endeavour to establish CPR education as a fundamental component of secondary school curricula nationwide.

Concept of Cardiopulmonary resuscitation (CPR)

Cardiopulmonary resuscitation (CPR) constitutes an emergency intervention aimed at preserving blood circulation and oxygenation in individuals undergoing cardiac arrest or respiratory failure. The principal objective of CPR is to sustain essential organ function until advanced medical care can be administered. This procedure involves a combination of chest compressions and artificial ventilation to facilitate the dissemination of oxygenated blood throughout the body.

The 2015 American Heart Association (AHA) delineates the standard cardiopulmonary resuscitation (CPR) protocol, comprising essential procedural steps (Kleinman et al, 2015; Travers, 2015 & Cheng et al, 2018). First, the rescuer ensures environmental safety and evaluates the responsiveness of the distressed individual. If the person is unresponsive, the rescuer should promptly activate the emergency response system, followed by the initiation of chest compressions. The AHA recommends that chest compressions should be performed at a rate of 100 to 120 compressions per minute, ensuring a depth of at least 2 inches for both adults and children. Additionally, rescue breaths should be administered alongside chest compressions, with a recommended ratio of 30 compressions to 2 breaths for individuals who are not breathing normally. An updated 2019 American Heart Association advanced cardiovascular life support guidelines summarizes the most recent published evidence for and recommendations on the

use of advanced airways, vasopressors, and extracorporeal cardiopulmonary resuscitation during cardiac arrest (Panchal et al, 2019).

Effective CPR requires proper training and certification to ensure that individuals can respond promptly and effectively in emergencies. Training programmes cover techniques for assessing the need for CPR, performing chest compressions, delivering rescue breaths, and utilizing automated external defibrillators (AEDs) when available. Additionally, CPR training emphasizes the importance of teamwork, clear communication, and coordination with emergency medical services (EMS) to optimize the chances of survival for the individual in distress.

Numerous studies have demonstrated the significant impact of CPR on improving survival rates for cardiac arrest patients. A study by Hasselqvist-Ax I et al (2015) found that bystander CPR more than doubled the likelihood of survival to hospital discharge for out-of-hospital cardiac arrest cases. Furthermore, a meta-analysis by Monsieurs et al. (2015) highlighted the association between high-quality CPR and improved outcomes, emphasizing the importance of ongoing training and quality assurance in CPR programmes.

In conclusion, cardiopulmonary resuscitation (CPR) represents a pivotal intervention with the potential to substantially enhance the survival prospects of individuals undergoing cardiac arrest or respiratory insufficiency. Effective outcomes hinge upon rigorous training, strict adherence to established procedural guidelines, and the prompt initiation of CPR by bystanders, collectively constituting indispensable elements in ameliorating the prognosis of individuals necessitating urgent medical intervention.

Nigerian secondary school curriculum

Secondary education in Nigeria holds a significant role in molding the intellectual and social development of students, serving as a crucial link between primary schooling and higher education institutions. Spearheaded by the National Educational Research and Development Council (NERDC), the Nigerian secondary school curriculum encompasses various essential aspects, reflecting a comprehensive approach to education.

Globally, curriculum is deemed essential to educational institutions. It is defined as the prescribed course of studies that students must complete to achieve a certain educational level (Edozie, 2016). Essentially, it encompasses all planned educational content and experiences delivered to individuals, regardless of their location, to meet the evolving demands of education worldwide (Olibie, Egboka & Ofojebe, 2016). A cornerstone of the curriculum lies in the diverse subjects it offers, ranging from mathematics and sciences to humanities, languages, and vocational courses. This breadth ensures students receive a well-rounded education catering to different interests and career paths. Structurally, the curriculum unfolds across two distinct levels: junior secondary school (JSS) (JSS 1 to JSS 3) and senior

secondary school (SSS) (SSS 1 to SSS 3), each comprising three years of study. Throughout this journey, students engage with both core subjects—such as English, mathematics, and basic sciences—and elective subjects tailored to their individual preferences and aspirations.

In the Junior Secondary School (JSS) curriculum, students are exposed to a diverse array of subjects, ensuring a comprehensive education. This encompasses subjects like Basic Science and Technology, Business Studies, Civic Education, Computer Studies, Cultural and Creative Arts, English Studies, French, Home Economics, Mathematics, Physical and Health Education, and Religious and National Values. The goal is to establish a robust foundation in these areas, laying the groundwork for more specialized study in the Senior Secondary School (SSS) curriculum.

Building upon the JSS framework, the SSS curriculum offers students the chance to delve deeper into specific subject domains. Core subjects at this level include English Language, Mathematics, Civic Education, one science discipline (Biology, Chemistry, or Physics), and one social science subject (Economics, Geography, or Government). Additionally, students have the flexibility to select from a variety of elective subjects, such as Agricultural Science, Arabic, Auto Mechanics, Building Construction, Christian Religious Studies, Clothing and Textiles, Financial Accounting, Fine Art, Food and Nutrition, French, Further Mathematics, Hausa, Igbo, Islamic Studies, Literature in English, Music, Physical Education, Technical Drawing, and Yoruba.

Critical thinking, problem-solving, and communication skills are integral components of the Nigerian secondary school curriculum. Through practical, hands-on learning experiences, students are encouraged to apply their knowledge and skills in real-world contexts. Extracurricular activities, including sports, clubs, and societies, further enrich their educational journey, allowing them to explore and develop their talents and interests beyond the classroom.

In response to evolving student needs and the demands of the contemporary world, efforts have been made to revise and modernize the Nigerian secondary school curriculum. Integration of technology and digital literacy has been prioritized, alongside initiatives to foster entrepreneurship and vocational skills development, better equipping students for future career paths and societal roles.

Moreover, the curriculum places significant emphasis on cultivating practical skills, critical thinking, and problem-solving abilities in students. This focus equips them with the necessary competencies to tackle real-world challenges effectively and make meaningful contributions to society. Furthermore, the curriculum is meticulously crafted to align with national development objectives, instilling values of citizenship, entrepreneurship, and ethical conduct in the student body.

Nigerian Secondary School Curriculum and Cardiopulmonary resuscitation (CPR) Education

Despite the strides made in curriculum development, several challenges persist in the Nigerian secondary education landscape. Aside from the notable challenges education system in Nigeria faces such as inadequate funding, outdated teaching materials, and overcrowded classrooms (Nwikpo & Ojukwu, 2022), hindering effective implementation, there is the issue of CPR education not being included as a distinct subject. This omission, rather than integrating CPR education solely as a sporadic programme within physical/health education, is particularly concerning in light of the current economic and stressful situations, where many are succumbing to cardiac incidents.

Globally, the significance of educating both school children and educators in cardiopulmonary resuscitation (CPR), alongside the critical life-saving role of prompt bystander CPR provision in managing out-of-hospital cardiac arrests (OHCA), has been extensively documented (Connolly et al., 2007; Wissenberg, 2013; Mpotos et al., 2013; School CPR (Free Student CPR by Protrainings), 2017; Onyeaso & Onyeaso, 2017). Despite the relatively subdued attention given to providing secondary school students in Nigeria with opportunities to acquire CPR education, except for the collaborative efforts of the Health Empowerment Africa Initiative (HEAI) and the Red Cross, which have instituted a CPR training initiative across schools nationwide, research findings from Onyeaso and Onyeaso (2017, 2019) have demonstrated that Nigerian students exhibit a readiness to excel in the skill when trained. Furthermore, these studies have indicated that variables such as age, gender, and school class do not exert statistically significant influences on CPR skills acquisition. Consequently, the implications of these findings suggest that integrating CPR into the Nigerian secondary school curriculum is a feasible endeavour, devoid of insurmountable obstacles. Moreover, Nigeria stands to benefit from successful CPR education initiatives implemented in other nations. For instance, countries like Norway, Czechoslovakia, Scandinavia, Great Britain, Canada, and the United States have already successfully integrated CPR training into their school curricula, yielding remarkable outcomes (Connolly et al., 2006; Meissner et al., 2012; Renter, 2018; Pivač et al., 2020). In summary, advocating for CPR education in Nigerian secondary schools is essential for equipping students with life-saving skills. By incorporating CPR training into the curriculum, we empower the next generation to respond effectively during emergencies.

Review of Relevant Literature

Enizi et al. (2016) conducted a cross-sectional study in 2015 within secondary schools in the Al-Qassim region of Saudi Arabia, aiming to evaluate the level of CPR knowledge and skills among 305 teachers, as well as their attitudes and willingness to engage in regular CPR training. Despite 35.7% of the participants having previously undergone CPR training, the study revealed a low level of CPR knowledge and skills.

Nevertheless, the teachers expressed a willingness and desire to receive further CPR training.

Renter (2018) examined the state of CPR training and awareness in various regions of the United States. The findings highlighted the urgent need for effective and standardized CPR training methods nationwide. The American Heart Association (AHA) advocates for a three-component approach in CPR school courses: recognition, hands-on practice, and defibrillator education. Advocacy and rigorous scientific research were emphasized as crucial for developing more efficient CPR training programs to empower the public with life-saving skills.

Utilizing a mixed methods research design, Pivač et al. (2020) investigated the impact of CPR training on schoolchildren in Slovenian elementary schools. Conducted in 15 public elementary schools, the study involved 764 schoolchildren before CPR training and 566 after training. Significant improvements in CPR knowledge, attitudes towards helping others, and self-confidence were observed post-training. The study recommended early introduction of CPR training in schools.

Cheng et al. (2018) provided valuable insights on high-quality CPR in compliance with AHA guidelines in their article "Resuscitation Education Science: Educational Strategies to Improve Survival Outcomes." While not specific to Nigeria, relevant strategies from this research could be adapted to the Nigerian context.

Onyeaso and Onyeaso (2019) assessed the pre-training and post-training theoretical CPR knowledge of two cohorts of Nigerian university students. The study found that students had no prior exposure to CPR skills before training. Both hands-only CPR and conventional CPR groups demonstrated statistically significant improvements in post-training theoretical knowledge of bystander CPR, with no significant difference observed between the two training methods.

In a quasi-experimental study in 2017, Onyeaso and Onyeaso compared the attitudes towards CPR among 41 Nigerian practicing professionals and 41 undergraduate student teachers. Pre-training and post-training attitudes were assessed using a self-administered questionnaire. The results indicated statistically similar positive attitudes towards CPR in both groups before and after training.

Benefits of CPR Education in Secondary Schools:

1. Enhanced Lifesaving Competence:

CPR training endows students with the essential knowledge and practical competencies requisite for effective response to cardiac emergencies. They adeptly recognize cardiac arrest symptoms, execute chest compressions, and administer rescue breaths. This empowerment instills self-confidence and preparedness to take action in life-threatening situations.

2. Increased Survival Probabilities:

Teaching students the skills of CPR dramatically elevates survival rates post-

cardiac arrest, potentially doubling or tripling chances of a person's survival. Following this, schools contribute to a more resilient community, equipped to confront emergencies and significantly increasing survival rates and fostering a healthier community (Monsieurs et al., 2015).

3. Cultivation of Community Preparedness:
CPR education nurtures a culture of preparedness within communities, equipping students to deliver immediate assistance during cardiac incidents. Their adeptness in emergency response bolsters community safety and readiness.

4. Instilling Compassion and Responsibility:
Beyond technical skills, CPR training instills virtues of compassion and civic responsibility in students. They recognize the transformative potential of their actions, fostering a sense of duty that transcends CPR training to permeate various societal contexts.

5. Promotion of Critical Thinking and Problem-Solving:
CPR education serves as a catalyst for honing critical thinking, problem-solving, and collaborative skills among students. They adeptly assess emergency situations, make informed decisions, and execute prompt interventions; skills valuable not only in CPR scenarios but also in and future career paths (Vilhelmova et al., 2017).

6. Real-World Applicability:
CPR skills imparted in secondary schools resonate with practical utility in everyday life, preparing students for real-world challenges and future occupational endeavours.

7. Increased Bystander Intervention:
By training students in CPR, schools expand the pool of potential bystander CPR providers, significantly impacting survival rates of cardiac arrest victims **across** familial, educational, and communal settings**.**

8. Propagation of Health Awareness and Preventive Measures:
CPR education serves as a conduit for heightening awareness regarding cardiovascular health, risk mitigation strategies, and the pivotal role of timely intervention in preserving overall well-being (Amoah et al, 2021).

9. Cultivation of a Preparedness Culture:
Integration of CPR education into secondary school curricula engenders a culture valuing preparedness and life-saving proficiency. Students imbibe principles of responsibility and altruism, embodying attributes essential for fostering resilient and socially conscientious communities.

Conclusion
CPR education in secondary schools not only imparts technical proficiency but also cultivates a cadre of responsible, compassionate, and competent individuals poised to positively impact their

communities and effectuate life-saving interventions.

Challenges of Implementing CPR Education in Nigerian Schools

The endeavour to integrate cardiopulmonary resuscitation (CPR) training within Nigerian schools confronts several formidable challenges necessitating strategic resolution for efficient implementation. . Below are some of the key challenges:

1. **Inadequate Infrastructure and Resource Allocation**:

A salient impediment pertains to the paucity of infrastructure and resources requisite for CPR instruction within Nigerian schools. Deficiencies encompass the dearth of essential training paraphernalia, including mannequins and Automated External Defibrillators (AEDs), needed for hands-on CPR practice (Adeloye et al., 2019). The absence of such foundational resources impedes the effective delivery of CPR education to students.

2. Paucity of Qualified Instructors:

An exigent challenge manifests in the scarcity of adequately trained CPR instructors within Nigerian educational establishments. The process of certifying educators and staff members as proficient CPR instructors demands substantial temporal, fiscal, and logistical investments. The deficiency in trained instructors encumbers the implementation of CPR training initiatives and compromises the caliber of education dispensed to students.

3. Curricular Stringency:

The extant curriculum in Nigerian schools may already be saturated, rendering integration of additional subjects such as CPR training a formidable task. The assimilation of CPR education necessitates meticulous coordination and collaboration between educational authorities and health institutions to avert oversight of fundamental topics (Adeloye et al., 2019).

4. Socio-cultural Hurdles:

Socio-cultural dynamics engender further hurdles to the assimilation of CPR training within Nigerian schools. Prevailing cultural norms, misconceptions, and stigmatization surrounding health and emergency response potentially impede the reception of CPR education among students, parents, and the broader school community. Mitigating these socio-cultural barriers mandates targeted awareness campaigns and community engagement endeavors.

5. Policy Ambiguity and Advocacy Imperatives:

The absence of unequivocal policies mandating CPR training in schools emerges as a substantial impediment to implementation. The lack of formal mandates or guidelines from educational authorities undermines incentives for prioritizing CPR education within schools. Advocacy endeavors are indispensable for heightening policymakers' cognizance regarding the significance of CPR training and advocating for policy reforms conducive to its curriculum integration.

6. Sustainability Imperatives and Evaluative Rigour:

Ensuring the enduring viability of CPR training programs within Nigerian educational precincts and conducting comprehensive evaluative assessments pose formidable challenges. Schools necessitate

establishment of mechanisms for protracted sustenance of CPR education initiatives, encompassing recurrent training updates, refresher courses, and robust monitoring and evaluation frameworks to gauge efficacy (Adeloye et al., 2019).

Addressing these challenges requires a multi-faceted approach involving collaboration between education authorities, health organizations, policymakers, and community stakeholders. By surmounting these impediments, Nigerian schools can achieve the seamless integration of CPR training into the curriculum; endowing students with life-saving proficiencies consequential in exigent scenarios.

Functional Strategies for Inclusion of CPR Education in Nigerian Secondary School Curriculum

Inclusion of CPR education in the Nigerian secondary school curriculum can be facilitated through practical strategies. These are:

1. Assessment of Current Knowledge and Attitudes

Begin by conducting a comprehensive survey to gauge the existing knowledge and attitudes of both teachers and students towards CPR. This initial step is crucial for tailoring the CPR curriculum to address specific needs and rectify misconceptions (Onyeaso, 2017).

2. Teacher Training Initiatives

Develop and execute teacher training programmes focused on CPR to ensure educators are proficient in imparting these life-saving skills. Certification should be granted upon programme completion to validate their competence (Onyeaso et al., 2017).

3. Integration into the Curriculum

Where CPR education may not be outrightly cut out on standalone subject status for constraints of ready human resource and other exigencies, seamlessly integrate it into existing subjects such as Physical Education or Biology, mandating it as an integral component of the curriculum. This approach facilitates a smooth incorporation of CPR training (Onyeaso, 2017).

4. Practical Skill Enhancement

Enhance practical skills by incorporating hands-on practice with mannequins into the curriculum, enabling students to proficiently perform CPR. Utilizing audio-visual aids like PowerPoint presentations can further enrich the learning process (Onyeaso et al., 2017).

5. **Community Engagement**:

Involve the local community and healthcare professionals in the development and implementation of the CPR curriculum. Their expertise and support can be invaluable (Onyeaso, 2017)

6. Advocacy for Policy Changes

Advocate for policy amendments at both state and national levels to mandate CPR education in schools. Collaborate with organizations that have successfully advocated for similar legislation in other countries (ACEP, 2017).

7**. Overcoming Implementation Hurdles**

Tackle common implementation challenges such as inadequate infrastructure, insufficient funding, and teacher resistance through strategic planning and resource allocation (Ukpong & Udoh, n.d.).

8. Monitoring and Evaluation: Establish a system for monitoring and evaluating the effectiveness of the CPR education program. This should include regular updates to the curriculum based on feedback and new developments in CPR techniques (Onyeaso, 2017).

9. Monitoring and Evaluation Systems

Establish a robust system for monitoring and evaluating the effectiveness of the CPR education program. Regular updates to the curriculum should be made based on feedback and advancements in CPR techniques (Onyeaso, 2017).

These strategies aim to establish a solid framework for CPR education in Nigerian secondary schools, effectively addressing both educational and systemic obstacles. Implementing these strategies could significantly enhance students' preparedness to respond to medical emergencies.

Recommendation

Contemporary scholarship underscores the imperative for CPR education to assume a prominent position within the Nigerian school curriculum, particularly at the senior secondary level. It is noteworthy to acknowledge and commend the significant strides being undertaken by the Health Empowerment Africa Initiative (HEAI), in conjunction with the Red Cross, in instituting a CPR training initiative across schools nationwide. This collaborative endeavor signifies a pivotal advancement in reshaping health education in Nigerian schools by instating comprehensive Cardio-Pulmonary Resuscitation (CPR) training programmes.

The concerted effort to imbue students with life-saving proficiencies and instill a culture of health consciousness and emergency readiness from an early educational stage represents a commendable stride in the appropriate direction. Nevertheless, governmental authorities and policymakers must go further. Instead of relegating this critical skill to the confines of an integrated program within Health Education, it is imperative to integrate CPR education into the formal Nigerian secondary school curriculum as a standalone subject.

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