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Barriers to Continuing Professional Development (CPD) in Radiography: A Review of Literature from Africa

Osward Bwanga

Midland Regional Hospital at Tullamore, Radiology Department, Ireland

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Barriers to Continuing Professional Development (CPD) in Radiography: A Review of Literature from Africa

Oswald Bwanga

Midland Regional Hospital at Tullamore, Radiology Department, Co. Offaly, Ireland

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Abstract

Purpose: To review the barriers to continuous professional development (CPD) learning activities in radiography in Africa and propose strategies for supporting radiographers on the continent.

Method: A literature search was conducted in four databases: ScienceDirect, PubMed/MEDLINE, CINAHL, and Google Scholar with no time limit. This was supplemented with hand searching to avoid missing relevant literature. All research studies conducted in Africa on this subject were included in the review. Data were synthesised and analysed thematically.

Results: Seven research studies were found to be relevant and included in this review. Three main themes on barriers to radiographers' participation in CPD learning activities were identified: attitudinal, physical, and structural barriers. Attitudinal barriers include a lack of self-motivation and a feeling that topics are irrelevant at study days. The identified physical barriers are time constraints, financial constraints and distance to CPD events, and limited resources. Structural barriers identified include a lack of knowledge about learning opportunities, shortage of staff, poor study days notification and communication, and a lack of support.

Conclusion: There are several barriers to radiographers' participation in CPD learning activities identified in this review. Strategies to support radiographers are proposed. It is anticipated that the implementation of the proposed support strategies will alleviate the barriers and allow active engagement of radiographers in continuing education.

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E-mail address: o.bwanga@yahoo.com.

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1. Introduction

Continuing professional development (CPD) is an ongoing professional activity in which a practitioner identifies, undertakes, and evaluates learning appropriate to the maintenance and development of the highest standards of practice within an evolving scope of practice.¹ The concept of undertaking CPD or continuing education originated from the evidence that undergraduate education and training alone could not prepare workers for whole professional life because knowledge has a half-life of approximately five years after which it declines.^{2,3} This means that initial undergraduate education and training is inadequate; regular updating of knowledge and skills is required. In recent years, most regulators of health professionals globally have implemented compulsory CPD activities for their registrants.^{1,4–6}

This study focuses on reviewing the barriers to CPD in radiography in Africa. Most of the reviews on this subject have been conducted in Europe, but the barriers may differ between Africa and Europe. Africa is the world's second-largest continent made up of 54 countries with a total population of 1.3 billion.⁷ Literature search reviewed the availability of radiography training programmes in almost all countries, except for few countries such as Botswana. Two levels of qualifications were identified: a three -year diploma in radiography and a four or five -year degree in radiography.^{8–11} The availability of local training has resulted in having a good number of radiographers. Few examples of countries with available data on the radiography workforce: Zambia (N = 919).¹²; South Africa (N = 7771)¹³ and

Nigeria (N = 1300).¹⁴ However, the main challenge is shortage of radiologists. There is an average of 3.6 radiologists per one million population.¹⁵ To reduce the workload of radiologists, radiographers have started taking up roles that were traditionally performed by radiologists, such as image reporting.¹⁶ To perform these new roles effectively and efficiently, radiographers need to acquire new knowledge and skills, through learning activities such as CPDs.

In general, there are numerous benefits to undertaking CPD learning activities for health professionals, regulators, employers, and patients. For health professionals, it improves confidence in the delivery of professional services, promotes and maintains competence to practice, promotes lifelong learning, and enhances career opportunities.^{17–19} For regulators, it ensures that registrants maintain competences and it safeguards the standards of practice to protect patients from harm.^{5,6} For employers, it contributes to a skilled and competent workforce and improves staff motivation and morale.^{17,19} Lastly, for patients, CPD learning activities allow them to receive high-quality healthcare services and patient care.^{5,19}

In radiography, the literature review found four specific reasons for participating in continuing education. Firstly, there has been advancement and increase in the availability of modern imaging modalities in Africa, such as ultrasonography (US), computed tomography (CT), magnetic resonance imaging (MRI), nuclear medicine (NM), and mammography. Secondly, the film-screen imaging system is being replaced with computed radiography (CR) and digital radiography (DR) in most African countries.

This includes the introduction of the Radiology Information System (RIS) and Picture Archiving and Communication System (PACS). Thirdly, radiographers have started extending their roles due to a critical shortage of radiologists and increase in demand for imaging services.¹⁶ Lastly, the delivery of radiography clinical education is changing from a clinical supervisor-centred approach to a student-centred approach.²⁰ In a student-centred approach, learners take more responsibility for their learning. These four changes to radiography practice require radiographers to keep up to date with knowledge and skills. These factors are the driving force for continuing education in radiography.

CPD reflects the adult learning principles of autonomy, self-directed, goal orientated, and practice-based learning.²¹ There are four main stages in the CPD learning process: review, plan, implement, and evaluate and reflect.⁶ The first stage of review involves a self-directed assessment of individual knowledge, skills, and performance in the context of a specific profession, such as radiography. The practitioner should put in mind the current and future practices when undertaking the self-assessment. The second stage of planning includes identifying individual learning needs, the outcome to achieve, and the learning activities to help achieve the outcome.²¹ The third stage of implementation entails acting to achieve the identified learning activities.¹⁸ The final stage involves evaluating and reflecting on the impact the learning activity has made to improve the quality of service delivery. All these stages are challenged by multi-factorial reasons that act as barriers to their fulfilment,²² which must be addressed for learning to be successful.²³

To date, reviews in this area have consisted of literature from Europe. Several research studies have been conducted in Africa on this topic, but the reviewer was unable to find any review that has brought these findings together. The aim of this article, therefore, is to review the barriers to continuous professional development (CPD) learning activities in radiography

in Africa and propose strategies for supporting radiographers on the continent.

2. Method

A literature review was used to provide summaries of the available literature on the barriers to CPD in radiography in Africa. A literature review is an important source of ideas, arguments, and information as it is written by experts in the field and provides a general summary of the topic area.²⁴ Ethical approval was not necessary because the reviewer used secondary data which had already been subjected to an ethical review for each primary research study. Besides, the data is publicly accessible.

2.1. Literature search

A comprehensive literature search was conducted in February 2020 to identify research studies conducted in Africa on CPD in radiography. The search was undertaken in four online databases for health professionals: Cumulative Index to Nursing and Allied Health Literature (CINAHL), ScienceDirect, PubMed/MEDLINE, and Google Scholar. The following synonyms and common operators were used to search for primary research studies: “continuing professional development” AND “radiography”, or “radiographer”. The word “barrier” was not included in the search strategy to avoid restricting the results. During a scoping literature search, the reviewer found that most barriers to CPD in radiography are not researched on their own but investigated with other factors. The electronic database search was supplemented with manual searches of radiography and health professional education journals. The journals searched include the Radiography Journal, South African Radiographer Journal, Health Professions Education Journal, International Journal of Medical Education, and African Journal of Health Professions Education. The manual searches also included internet searching, grey literature (dissertations and theses), contacting

Table 1
Inclusion and exclusion criteria for the review.

| Inclusion and exclusion criteria | |
|---|---|
| Inclusion criteria | Exclusion criteria |
| <ul style="list-style-type: none"> • Research studies that focus on or include barriers to CPD in radiography • Primary research studies (qualitative, quantitative and mixed methods) • Research studies conducted in Africa • Research studies published in English | <ul style="list-style-type: none"> • Other healthcare professions other than radiography • Systematic reviews, literature reviews and expert opinions • Research studies conducted outside Africa • Research studies not published in English |

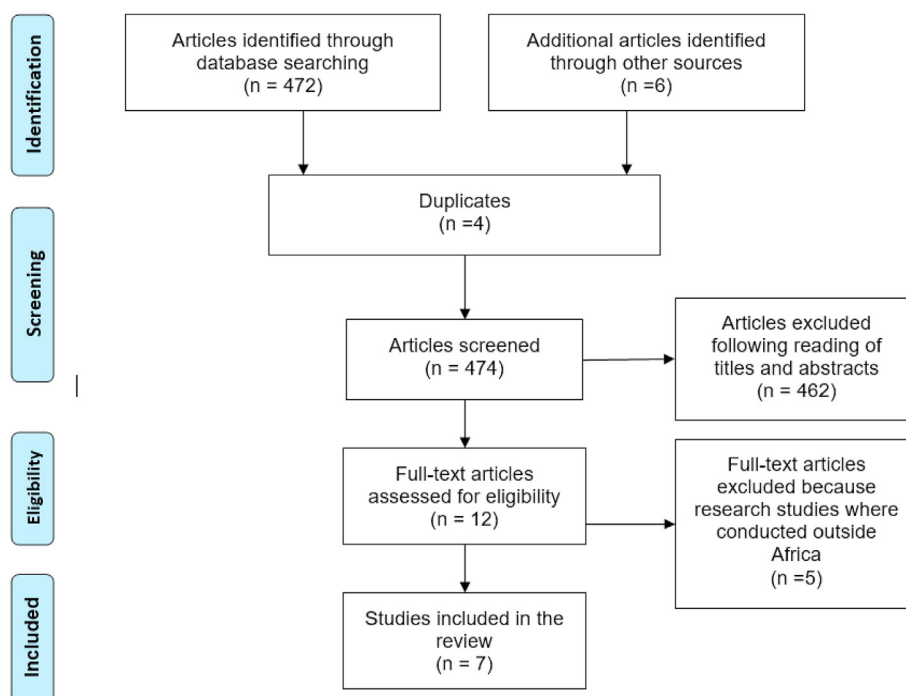


Fig. 1. Literature search and selection process using the PRISMA model.

relevant researchers, and searching cited references from the main retrieved research studies. The manual search may have helped to avoid possible bias in “keywords” search systems because some research studies can be missed if not correctly indexed.²⁴

All the searches were conducted in line with the inclusion and exclusion criteria stated in Table 1. There was no publication date range limit of research studies due to limited literature on this subject in Africa.

2.2. Selection of primary research studies

The initial search yielded a total of 478 articles (472 from online databases and 6 from manual searches). Four duplicate articles were removed. The titles and abstracts of the remaining 474 articles were screened, and 462 articles were excluded because they did not meet the predetermined inclusion criteria (Table 1). The remaining 12 articles were downloaded and analysed in their entirety. At the end of this screening process, a total of five research studies,^{17,25–28} were excluded because they were not conducted in Africa as per the objective of this review. Ultimately, a total of seven research studies remained and were included in this review. Fig. 1 shows the literature search and

selection process using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow chart.

2.3. Data synthesis and analysis

Data from the included primary research studies were extracted into a study characteristics table (Table 2). Information extracted included the author (s), year of publication, the title of the research, research design and data collection instrument used, description of barriers identified, and country where each research study was conducted. The barriers to radiographers’ participation in CPD learning activities were analysed using thematic framework synthesis. The framework synthesis began with a priori framework of three themes: attitudinal, physical, and structural barriers, against which data were extracted and synthesised.²⁹

3. Results and discussion

The results are presented and discussed in relation with the existing literature. For each identified barrier, a support strategy is proposed that can help radiographers in participation in continuing education.

3.1. Characteristics of the included research studies

Seven research studies were found to be appropriate and included in this review. Six of these research studies,^{3,4,30–33} were conducted using a quantitative design and used a survey questionnaire to collect data, whilst one¹⁰ used a mixed-methods design and data was collected using both focus group discussion and a survey questionnaire. This is not a surprising finding, because research in radiography largely stems from the positivist (quantitative research design) paradigm. However, quantitative research designs are not always suitable to answer all questions as this approach is

limited to observations and data that can be measured and analysed statistically.³⁴ To have an in-depth understanding of the phenomena, a qualitative approach is suitable.³⁵ Future research on this topic should consider using a qualitative research design to complement the available quantitative studies to have a complete picture of the barriers to CPD being experienced by radiographers.

The included research studies were conducted across the continent of Africa: Zambia (N = 1), Namibia (N = 1), South Africa (N = 2), Kenya (N = 1), Sudan (N = 1) and Ghana (N = 1). The rest of their characteristics are summarised in [Table 2](#).

Table 2
Characteristics of included research studies (N = 7).

| No | Author(s) | Year | Title | Design and data collection method (s) | Barriers identified | Country |
|----|-------------------------------|------|--|---|--|--------------|
| 1 | Gawugah et al., ⁴ | 2011 | The uptake of continuing professional development (CPD) by Ghanaian radiographers | Quantitative and questionnaire | <ul style="list-style-type: none"> • Limited learning facilities • Lack of self-motivation • Staff shortage • Lack of employer support • Lack of CPD study days | Ghana |
| 2 | Elshami et al., ³⁰ | 2016 | Continuing professional development in radiography : practice, attitudes and barriers | Quantitative and questionnaire | <ul style="list-style-type: none"> • Cost of CPD activities • Limited time • Family responsibilities • Feeling of irrelevant topics • Distance to CPD events • Shortage of staff • Lack of supervisor support • Difficult to get leave | Sudan |
| 3 | Mung'omba ¹⁰ | 2016 | Core competencies of radiographers working in rural hospitals of KwaZulu-Natal, South Africa | Mixed methods and focus group and questionnaire | <ul style="list-style-type: none"> • Lack of support • Distance to CPD events • Shortage of staff • Lack of self-motivation | South Africa |
| 4 | Kanamu et al., ³ | 2017 | Barriers to continuous professional development participation for radiographers in Kenya | Quantitative and questionnaire | <ul style="list-style-type: none"> • Time constraints • Financial constraints • Lack of information • Poor organisational culture • Limited resources • Lack of supervisor support | Kenya |
| 5 | Uarije et al., ³¹ | 2017 | Radiographers attitudes towards continuous professional development at state hospitals in Windhoek, Namibia | Quantitative and questionnaire | <ul style="list-style-type: none"> • Lack of time • Financial constraints • Family obligation. | Namibia |
| 6 | Naido & Naido ³² | 2018 | Continuing professional development opinions and challenges experienced by radiographers in KwaZulu-Natal province, South Africa | Quantitative and questionnaire | <ul style="list-style-type: none"> • Lack of self-motivation • Lack of time • Shortage of staff • Lack of knowledge • Lack of employer support • Limited resource | South Africa |
| 7 | Mwansa ³³ | 2018 | Continuing professional development: perceptions and experiences of radiographers in Lusaka, Zambia | Quantitative and questionnaire | <ul style="list-style-type: none"> • Lack of support • Poor notification • Time constraints • Lack of CPD study days • Family and social commitments | Zambia |

Table 3

Three themes: attitudinal, physical and structural barriers.

| Themes | Sub-themes |
|--|--|
| Theme 1: Attitudinal barriers to CPD learning activities in radiography | <ul style="list-style-type: none"> • Lack of self-motivation • Feeling that topics are irrelevant at study days |
| Theme 2: Physical barriers to CPD learning activities in radiography | <ul style="list-style-type: none"> • Time constraints and commitments • Financial constraints and distance to study events • Limited learning resources |
| Theme 3: Structural barriers to CPD learning activities in radiography | <ul style="list-style-type: none"> • Lack of knowledge about learning opportunities • Shortage of staff • Poor study days notification and communication • Lack of support |

3.2. Themes

Three themes were identified following data synthesis and analysis: attitudinal, physical, and structural barriers to CPD learning activities (Table 3).

3.2.1. Attitudinal barriers to CPD learning activities

Four out of seven research studies probed the attitudinal barriers of radiographers in Africa towards participation in CPD learning activities.^{4,10,30,32} Ugwu and others³⁶ define attitudinal barriers as attitudes and self-perceptions about oneself as a learner. This theme had two sub-themes: self-motivation and feeling that topics are irrelevant at study days (Table 3).

A lack of self-motivation was found as a barrier to CPD in radiography.^{4,32} The negative attitude of some radiographers came out clearly in a research study conducted in South Africa by Mung'omba,¹⁰ where one radiographer said: “We just go for these study days to collect points, socialise and meet our old friends.” This was due to a lack of understanding of the importance of participating in continuing education. It should be mentioned that CPD learning is a personal activity where the practitioner identifies own learning needs, make and implements the personal learning plan, and reflects on the knowledge acquired.^{1,6} There is a need for regulators and professional bodies to bring awareness to radiographers through education sessions about the importance of participating in continuing education. Contento³⁷ pointed out that as people acquire knowledge, their attitudes change; changes in attitude then lead to changes in their practices. In the context of this review, the increase in knowledge amongst radiographers will lead to changes in their attitudes and bring about their participation in continuing education.

The other attitudinal barrier identified was a feeling amongst radiographers that irrelevant topics were

presented at study days.³⁰ Radiographers wanted to learn on topics useful to their current and future practices. This finding agrees with Harden and Laidlaw¹⁸ who point out that learning is more effective when the learner is engaged in applying theory into practice. This means that demonstration of the relevance of topics presented at study days by organisers and presenters can create a powerful and rich experience for radiographers. Stakeholders should always engage respective radiographers in identifying the areas of need for continuing education. A good example is a research study by Mung'omba,¹⁰ which engaged radiographers in identifying CPDs required to those working in rural settings of South Africa. This gives radiographers a voice and, in turn, lead to their participation in continuing education.

3.2.2. Physical barriers to CPD learning activities

All research studies included in this review investigated the physical barriers to radiographers' participation in CPD learning activities in Africa. Physical barriers are factors in an individual's life circumstances at any given time which hinders their participation in continuing education.³⁶ Time constraints and commitments, financial constraints and distance to study events, and limited learning resources were physical barriers identified (Table 3).

A lack of time due to workload was found as a barrier to radiographers' participation in CPD learning activities.^{3,30–33} They could not also undertake CPDs outside their work hours because of family and social commitments.^{30,31,33} This barrier includes time to attend the study days and recording of evidence. This finding has also been reported in Europe.^{17,19, 26,27} A lack of time is further compounded to radiographers working in teaching hospitals with the additional responsibility of the facilitation of practice-based learning to radiography students. It was clear that

Table 4

Proposed strategies to support radiographers in the participation in CPD learning activities.

| Theme | Support strategies to overcome the barriers |
|--|---|
| Attitudinal barriers to CPD learning activities in radiography | <ul style="list-style-type: none"> • Empowering radiographers with lifelong learning skills during undergraduate education • Increase awareness of CPD learning activities by professional bodies representing radiographers • Engage radiographers in identifying the areas for CPD study events |
| Physical barriers to CPD learning activities in radiography | <ul style="list-style-type: none"> • Need for protected time for CPD activities during working hours • Option for recording CPD evidence: manual or online system • Balance locations of CPD study days between urban and rural areas • Employers should provide educational resources, including free internet to support CPD activities |
| Structural barriers to CPD learning activities in radiography | <ul style="list-style-type: none"> • Educate radiographers on what constitutes a CPD learning activity and provide a range of learning opportunities • Professional bodies should establish journals for sharing knowledge and dissemination of information • Use social media for dissemination of information • Professional bodies should work together with trade unions to advocate for increased staffing levels • X-ray department and hospital management should develop a CPD policy on supporting radiographers. |

radiographers preferred attending to CPD activities during work time. Employers should put in place a written guarantee of protected time and allow CPD learning activities during working hours. Regulators should also give options to record the evidence, either manually or online system. This could allow registrants to choose the method most suitable to them. The electronic recording system has been found to save time when compared with the hardcopy system.^{1,6,32}

Physical distance to established educational facilities where seminars were held was another barrier cited by radiographers of not attending the study days.^{10,30} The associated factor to distance was the cost of traveling to attend these study events.^{3,10,30} These two factors mostly affected radiographers working in rural areas because most of the study days were held in urban areas. This finding was also reported by radiographers working in remote areas of New Zealand.²⁶ To overcome this barrier, professional bodies should encourage study days in rural areas as well.

The other physical barrier revealed in this review was limited learning resources.^{3,4,30} This problem was mostly reported by rural radiographers who complained of a lack of access to professional journals, textbooks, and the internet. It should be mentioned that most of the countries in Africa have got limited resources.^{3,4,32} Furthermore, there is limited internet access in rural areas to support teaching and learning.³ Nowadays, continuing education such as independent learning and professional journals are supported through the internet. The challenge of limited learning resources has not been reported in the literature from Europe, possibly due to better economies. Employers in Africa should support radiographers by providing free internet in working places to support them with continuing education.

3.2.3. Structural barriers to CPD learning activities

Six out of seven research studies^{3,4,10,30,32,33} reported structural barriers to the participation of radiographers in continuing education. Ugwu and others³⁶ define structural barriers as practices, procedures, and policies that place limits on opportunities for radiographers to participate in continuing education. Lack of knowledge about learning opportunities, shortage of staff, poor study days notification and communication, and lack of support were the structural barriers reported (Table 3).

A lack of knowledge amongst radiographers regarding learning opportunities was reported as a barrier to participation in CPD learning activities.³² Most of the radiographers believed that continuing education is about attending a formal study day and cited a lack of learning activities as a barrier to their participation.^{4,33} There was generally poor awareness amongst radiographers of what constitutes CPD learning activities. A lack of understanding has also been identified in a research study conducted in the UK and New Zealand.²⁶ However, CPD involves any activity where the practitioner is learning and includes a range of formal, informal, and work-based learning activities.^{1,6} There are numerous learning activities which include work-based learning, journal clubs, peer discussion, performance reviews, in-service training, workshops, conferences, clinical meeting, personal reflections, and being a member of the professional body.^{1,18} Professional bodies and schools of radiography should bring awareness about continuing education to radiographers and establish online learning activities.

Staff shortages and the associated increased workload were also cited as barriers to attending study days.^{4,10,30,32} Due to a shortage of staff, radiographers reported finding it difficult to ask for study leaves.

Inadequate staffing and associated high workloads have also been identified in the literature outside Africa.^{27,28} Professional bodies representing radiographers should work together with trade unions to advocate for increased staffing levels. Some countries may also need to increase the number of schools of radiography to meet the increasing demand for radiographers and imaging services on the continent.³⁶

The other factor which prevented radiographers from attending formal seminars and workshops was a lack of information and poor communication or notification of such study days.^{3,32,33} Literature also identifies late advertising of professional educational events as a barrier to attending study days.³⁶ A lack of communication negatively affected radiographers in attending seminars or workshops. However, this barrier was not found in the literature from Europe. Professional bodies can provide study days notifications on their websites and in journals.³ There is a necessity to establish journals to assist in disseminating information and providing learning opportunities. Currently, there are only two radiography journals on the continent: South African Radiographer and Journal of Radiography and Radiation Sciences of Nigeria. Social media, such as Facebook, Twitter, and WhatsApp is another channel which can be used to disseminate information. In a research study conducted by Bolderston and others,²⁷ radiographers found online Twitter journal clubs as a useful tool for communication and a source of continuing education.

The most cited barrier to CPD in radiography was a poor organisation culture that does not adequately support radiographers in continuing education. Radiographers reported a lack of support from radiographers in management positions and employers as a barrier to their participation in continuing education.^{4,10,30,33} Generally, X-ray departments are headed by a radiologist (medical doctor) who may not be readily disposed to the continuous acquisition of knowledge and skills by radiographers with the attendant quest for role extension.³⁶ This is a common scenario and explains the lack of support from the X-ray department and hospital management. The College of Radiographers¹ highlights four key players who should support radiographers in continuing education who include the employers, managers, schools of radiography, and professional bodies. To overcome this challenge, the X-ray department and hospital management should develop and adhere to CPD policy on supporting radiographers in continuing education.

4. Proposed strategies to support radiographers in undertaking CPD activities

This review found several barriers that radiographers working in Africa encounter when attempting to undertake CPD learning activities. Table 4 presents the proposed strategies to alleviate the identified barriers.

It is anticipated that the implementation of the proposed strategies will alleviate the identified barriers and facilitate the active participation of radiographers in continuing education.

5. Conclusion

Radiography as a profession is developing and changing globally. These changes are due to advances in technology and an increase in demand for imaging services. To adapt to these changes, radiographers need to engage in continuing education to maintain and develop their knowledge and skills. However, this literature review has revealed that radiographers working in Africa are experiencing several barriers to participation in continuing education. There is a need to support radiographers and improve the quality of imaging services. All the research studies were conducted from the radiographer's perspective. It is recommended that future research include all three key stakeholders: radiographers, professional bodies, and employers to have a complete understanding of the barriers to CPD in radiography.

Declaration of competing interest

The author declares no conflict of interest.

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