



NURSING IN NEPHROLOGY: PERCEPTIONS ABOUT COMPETENCES IN THE MANAGEMENT OF ACUTE KIDNEY INJURY

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ABSTRACT

Objective: to understand the perceptions of nurses specializing in nephrology regarding the skills needed to care for people with acute kidney injury. **Method:** qualitative study carried out with six nephrology nurses, using the focus group as a technique and the guiding question "Talk about your perceptions regarding the skills needed by nurses who care for people with acute renal failure". Audios were recorded, transcribed verbatim, and submitted to content analysis. **Results:** three categories emerged: pathophysiological knowledge of Acute Kidney Injury as a prevention and care strategy in pre-dialysis; operationalization and management of machines during dialysis therapy and difficulties in operationalizing care with transference of the responsibility to provide care for nursing technicians. **Conclusion:** knowledge about pathophysiology of acute kidney injury, skill in handling machines, intervention in complications, accurate analysis of exams, care with nutritional aspects and handling of catheters are the main skills required for operational care. However, the fragility of the legislation to this public makes it difficult to operate care safely.

Keywords: Nursing Care. Kidney disease. Nephrology Nursing. Qualitative Research. Population Groups.

INTRODUCTION

Acute Kidney Injury (AKI) is a common condition that affects approximately 13 million people per year, causing 1.7 million deaths per year⁽¹⁾. In South America, a systematic review study showed that the incidence of AKI is 29.6%, with a mortality rate of 38.9%, and is higher among patients admitted to the Intensive Care Unit (ICU)⁽²⁾.

This condition is defined by an increase in serum creatinine greater than or equal to 0.3 mg/dL within 48 hours, an increase in serum creatinine by 1.5 times the value of known baseline creatinine in the last seven days, or urinary volume less than 0.5 mL/Kg/H for six hours⁽³⁾. It is a severe manifestation with multiple and varied etiologies most commonly related to the use of medications, sepsis and major traumas. Intensive Care Units are the most

common environments intended for the care of AKI patients, for these patients require uninterrupted health care and specialized equipment and resources⁽⁴⁾.

A study carried out in the ICU showed a high mortality rate in AKI patients and many of them progressed to chronic kidney disease after the hospitalization period in these units⁽⁵⁾. A prospective observational study with 564 patients followed-up on a daily basis during admission to the ICU of a university hospital for two consecutive years found that the incidence of AKI was 25.5%⁽⁶⁾.

Thus, patients in critical health conditions admitted to the ICU are more likely to develop AKI, which may result in chronic kidney disease or even death⁽²⁾. However, despite the potential unfavorable outcomes, when diagnosed and treated early, AKI has great chances of regression⁽⁶⁾.

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In the intensive care setting, patients are dependent on nursing care. They are usually monitored to guarantee better outcomes, promote efficient development, and reduce or even eliminate preventable damages. In this context, nurses stand out as consolidated professionals worldwide to provide systematic actions aimed at the well-being and safety of the patients.

In view of the high mortality associated with AKI in the ICU context^(2,6) and the possibility of a better clinical outcome with the implementation of preventive measures, it is necessary that intensive care nurses in his practice of direct and uninterrupted care for critical patients be able to identify risk factors to implement preventive measures and safe care for those already affected by this condition.

In order to provide care to AKI patients who need dialysis therapy, studies^(7,8) point out three models of nursing actions in hemodialysis. One of them is the model in which the nephrology nurse leads the action, with technical and specialized knowledge for better management. In this model, the number of professionals and the costs of therapy are adverse points. Another model is one managed by the ICU nurse, with the advantage of early treatment and easy hemodynamic assessment of the patient, but without specialized knowledge and expertise to conduct the therapy. The third model is the collaborative one, in which there is the participation of nephrology nurses and ICU nurses, providing an exchange of knowledge.

A study that analyzed patient safety in the collaborative management model identified a reflection about qualification and availability before the demands to be addressed by nurses with regard to the management of technology, with repercussions in patient safety and weakening the role that ICU professionals play in this therapy. The study also recommended greater participation of dialysis nurses to reduce safety barriers, with more structured guidelines that help to subsidize their actions⁽⁴⁾.

A Brazilian study identified that the omission of care or *missed care* in the context of nursing care in hemodialysis in an intensive care unit ranged from 16.67% to 90%. In the association between professional profile and missed care in hemodialysis, there was a downward

relationship with training in Nephrology (80%), employment bond (73.33%), specialization in ICU care (66.66%), work shift, and length of service in the ICU, both with 46.66%⁽⁹⁾.

Another study about the insertion of the teaching of the theme "Patient safety" in higher education courses showed a lack of uniformity in the approach of the theme in undergraduate courses. Another aspect that stands out is the absence of a comprehensive discussion about vulnerabilities that professionals have to face in the process of the occurrence of errors⁽¹⁰⁾.

Regarding the knowledge of ICU nurses about the care of AKI patients, in a study developed with 216 nurses working in the ICU, inpatient and emergency units, through the application of a questionnaire on prevention, diagnosis and treatment of AKI, the authors identified that 57.2% of the participants were unable to identify the clinical manifestations of AKI, 54.6% were unaware of the incidence of AKI in ICU patients, and 66.8% incorrectly answered the question about measures to prevent AKI. The researchers concluded that the nurses did not have adequate knowledge about AKI⁽¹¹⁾.

The fragility of the nurses' knowledge hinders the clinical reasoning of these professionals and compromises the establishment of problem-solving care strategies, and this can have an impact on high mortality rate and prolonged hospital stay. Thus, the training and continuing education processes in the context of hospital practice need to be strengthened and the identification of urgent and necessary topics related to care by nursing professionals is a motivator of the learning process.

Given the context, this study aimed to understand the perceptions of nurses specializing in nephrology regarding the skills needed to care for people with AKI.

METHOD

The study had a qualitative nature, since it investigated questions related to motives, aspirations, beliefs, values and attitudes. It sought to deepen a reality that cannot be quantified, but rather investigated to exhaustion and understood⁽¹²⁾. Focus group⁽¹³⁾ was the technique used for data collection and the

subjects were nephrology nurses who worked in the care of people with AKI in ICUs in the state of Ceará, in November 2016. The methodological guidance to support the study was the method of content analysis.

For the development of the research, we sought to identify the services that worked in the care of AKI patients, which totaled eight services in Fortaleza - CE (five private clinics and three large public hospitals). Contact was made with these health services in order to approach the professionals (13 nurses) and send invitations via e-mail to them with options of dates for a face-to-face meeting.

It is noteworthy that in the context of nephrology nursing in Ceará, there are ten services that assist AKI patients in the state. These services have a total of 17 nephrologist nurses, 13 of whom are in Fortaleza. In operational terms, the work dynamics of nephrology nurses who provide care for AKI patients consists of daily assessment and, in case of need for dialysis, nursing technicians perform the procedure under the supervision of the local assistant nurse, since each clinic serves several hospitals and there is a need for patient to move from one to the other. Thus, as the majority of the dialysis sessions take place in ICUs, intensive care nurses are the ones who are rendered accountable for eventual complications in the dialysis procedure.

In order to carry out the study, the date and time was adjusted to ensure the presence of the largest possible number of participants. No inclusion or exclusion criteria were established in view of the small sample size, which consisted of six nephrologist nurses from a population of thirteen professionals who serve the city of Fortaleza. Participants were selected for convenience because of the difficulty of carrying out the face-to-face meeting. This amount was sufficient to form the focus group, as attested in other studies, according to which a focus group can be composed by six to 12 people⁽¹⁴⁾. The day before the meeting, a telephone contact was made with each participant to remind him/her the date and time and confirm his/her presence.

It is agreed that the ideal environment for holding focus groups must provide privacy, be comfortable, be free from sound interference,

and be easily accessible to participants. Thus, the meeting was held in a renal replacement therapy clinic in Fortaleza, in a room with an air-conditioned and easy access. Participants were gathered in this room and accommodated in chairs arranged in a circle. Six participants were present in the room at the time of the focus group, the main researcher, the auxiliary researcher and a moderator of the group.

The focus group occurred in a single meeting, as it was sufficient to achieve the objective of the study. This meeting lasted one hour and 30 minutes. The data collection started using the question to be addressed by the group: Please talk about your perception of the skills needed by nurses to care for people with AKI; and point out the main difficulties found for a good operationalization of this care. The focus group was guided by the moderator during the discussion and management of the group.

The focus group was audio recorded with a Sony digital voice recorder. Then, the lines were transcribed verbatim and the transcripts were given to the participants for possible corrections and comments. After approval by all participants, their statements were subjected to content analysis in the modality proposed by Bardin⁽¹⁵⁾, following three steps: pre-analysis, exploration of the material, and treatment of the results, which includes coding and inference. The research participants were identified by the letter P followed by a number from one to six.

The study respected the national and international requirements for research with human beings, being approved by CAAE: 55432216.8.0000.5054, under Opinion 1.519.319, and the ethical aspects were respected with the application of the informed consent term for all participants.

RESULTS

Of the six nephrology nurses participating in the study, five were female and one male, aged between 24 and 49 years, and working in nephrology nursing for four to 19 years (13 years on average).

The analysis of the data produced three categories. Two of them point out the skills needed by intensive care nurses in the care of AKI patients from the perspective of nephrology

nurses: pathophysiological knowledge of AKI as a pre-dialysis prevention and care strategy; and operationalization and management of machines during dialysis therapy. The third refers to the difficulty in operationalizing care.

Pathophysiological knowledge of AKI as a pre-dialysis prevention and care strategy

Speeches in this category point to the fact that nurses need to have greater knowledge about the pathophysiology of AKI because behaviors towards patients at greater risk of developing this condition differ in forms of treatment and are intimately linked to the scientific basis, whether due to care in search of prevention, control of staging or improvement of outcomes.

It all starts with knowing the pathophysiology. It is understood that there are three types of AKI and, for each of them, a different management of the patient. Knowing this, clinical reasoning is used based on the course of the disease [...]. (P1)

In pre-renal AKI, volume depletion occurs and the kidneys are negatively affected by this lack of volume. So the ideal action is to provide volume to see if the kidneys respond. This is different in the case of post-renal AKI, in which the volume cannot reach the kidney because of some obstruction, that is, fluids have to be restricted. In renal AKI, much can be avoided if adjusted doses of medications are given and, when possible, nephrotoxic drugs are changed. I think that knowing this information, a lot can be improved and even avoided [...]. (P2)

Prevention is confirmed by the mention of actions that enhance the outline of the patients' profile, seeking to understand their underlying diseases, associated risk factors, laboratory and imaging test results, in addition to the conscious use of radio-contrast and possible drugs of choice.

Nurses have a great responsibility in their hands, both to prevent and avoid the advance of the staging of the disease. (P3)

[...] in order to understand the type of AKI, it is often necessary to understand the patient's underlying diseases [...]. (P5)

Knowing what can trigger AKI, what drugs can be used, what should have the dose adjusted, what to

do before radio-contrast in patients with somewhat impaired kidney function, provide instructions on nutrition regarding a fluid-restricted diet (when it is the case) and continuously assessing diuresis, these things make nurses act preventively. If avoiding the disease is not possible, we can prevent it from staging and, thus, revert to avoid the chronic state. (P4)

As for pre-dialysis care, the statements showed the importance of assessing the vital signs of the dialysis patient coupled with the analysis of laboratory tests to accurately investigate the patient's stability so that only then the patient be released to renal replacement therapy.

[...] we cannot forget the great importance of understanding and evaluating the tests. Not only urea and creatinine, but also electrolytes and arterial or venous blood gases and even chest X-rays. Based on them, it is possible to identify either an altered kidney function or even a case of emergency to be referred to dialysis [...]. (P3)

Nursing care for dialysis begins with checking the exams, checking vital signs and positioning the patient in a comfortable position before even connecting the patient to the machine. (P1)

[...] the ideal is that dialysis therapy should only be started with the patient in a relatively stable condition, because dialysis per se is a destabilizing event. So it is necessary to check the exams, see how the hemoglobin is, the pressure, if there is a vasoactive drug installed so that the dialysis machine can be connected with safety. (P2)

[...] we must not forget that besides checking the routine exams (complete blood count, urea, creatinine, sodium, potassium and blood gases), we need to pay special attention to the clotting factors. (P4)

[...] monitoring of urine output, checking laboratory tests such as urea, creatinine and clotting factors; and also the monitoring of vital parameters are crucial in the whole process [...]. (P6)

In addition to verifying vital signs and implementing measures to promote comfort, it is evident from the speech of the professionals the importance given to the thorough pre-dialysis assessment, based on scientific knowledge about laboratory tests, to encourage decision making with the aim of promoting patient safety.

Operationalization and management of machines during dialysis therapy

The reflections showed the need to have the ability to act in some situations involving the patients, including: care with permanent and temporary vascular dressings, nutrition and diet, and complications during hemodialysis resulting in the category of operationalization and management of machines during hemodialysis.

[...] as in Cear , nurses and nephrologist physicians only visit and leave, the nurses and the ICU physicians are the ones responsible for supervising dialysis. This is why it is necessary to know how to handle the machine and to act in situations of complications [...]. (P1)

[...] knowing how to use the machine so that in case of emergency or complication you know how to proceed. The most common example is when the patient has hypotension. One must understand that it is necessary first change the machine parameters and administer serum before asking to switch off the dialysis [...]. (P6)

[...] as the patient's hypotension and coagulation of the system are the main complications during dialysis in intensive care units, nurses need to know how to behave when these complications happen [...]. (P5)

It is observed that the professionals are aware of the importance of directing the team based on evidence about the conduct to be taken. However, they believe in fragility when complications come from the hemodialysis machine.

[...] the dressing and the handling of the vascular access for hemodialysis deserve especial care. First to avoid infection; and second, because this patient can develop chronicity, and it is extremely important that his accesses be preserved, free from stenosis [...]. (P2)

[...] the patients are hypercatabolic. They lose weight very quickly and gain a lot of fluid abruptly. They do not appear to be thin, but in reality they are very malnourished [...]. (P5)

The discourse of the professionals highlights the need for attention to the vascular access, to prevent the chronicity of AKI and prevent the development of infections related to healthcare. Furthermore, attention is given in the speech to the need for greater knowledge about

hydroelectrolytic and nutritional mechanisms of AKI patients.

Difficulties in operationalizing care

The statements contribute to the problematization of the theme with respect to the accountability of ICU nurses in hemodialysis sessions, since these are highly complex procedures developed by nursing technicians with the supervision of nephrology nurses at a distance.

This argument is supported by questionings about the need for the presence of nephrology nurses during the dialysis procedure, especially in ICUs. The questions involved the transfer of responsibility for this care to a technical professional because of the lack of specific federal legislation aimed at AKI patients.

[...] for me, it is incoherent that not even one nephrology nurse on duty is present in each hospital, in view of the number of dialysis sessions that we have in some places. There are hospitals that perform more than 20 dialysis sessions per day [...]. (P2)

[...] what I find more strange is that the perfusion can only be done by a trained nurse, the perfusion nurse; but dialysis - which is ruled by the same principle, the same complications, the same degree of complexity, because acute patients are highly unstable - can be done even by a nursing assistant! COREN has to review this position. There is already a state here in the Northeast in which dialysis is only done by a nephrologist nurse [...]. (P6)

[...] as there is no specific legislation for AKI care services, each clinic does according to its understanding of what is best for each patient. But, I don't think it has to be that way! We have to have legislation to support us, establishing how we should at least do our job [...]. (P5)

[...] what I find most absurd is that our professional bodies do not pay attention to the importance of dialysis therapy being performed by a professional with a technical level, while a nasoenteric tube or temporary bladder catheterization, which is a much simpler procedure, can only be performed by a nurse [...]. (P4)

It is evident, according to the professionals, that there is a need for specific legislation aimed at AKI patients, especially with regard to the

regulation of the class council as to which professional is more indicated to perform the procedure safely for the patients, given the complexity involved in every dialysis procedure.

DISCUSSION

The speeches revealed that the main actions of nurses for AKI patients should focus on prevention (when possible) and early detection in order to direct care and ensure safety. In this sense, it is inferred that a high level of knowledge is necessary, as it allows establishing clinical reasoning with nursing interventions aimed at the real and potential health needs of patients, thus contributing to improving the quality of nursing care⁽¹⁶⁾.

The participation of nurses in early diagnosis is extremely important because there is a possibility of reversion. Early diagnosis will contribute to the prevention of complications and better prognosis of the patients, since nurses will base their decisions in scientific evidence⁽⁵⁾.

A study reports the scarcity of literature focused on the management of machines to guarantee effective nursing care for patients with AKI, the condition addressed here, like the clinical complications in every dialysis procedure. They reaffirm the importance of assessing how nurses care for patients undergoing renal replacement therapy and how they apprehend and sustain knowledge and skills for safe practice⁽¹⁷⁾.

This difficulty goes beyond Brazilian borders, because in other countries, such as Italy, the management of critical patients undergoing continuous kidney treatment is not standardized. The duties of critical care and dialysis nurses were not satisfactory, given that they often overlapped or left gaps in care. Thus, greater organization and definition of assignments are expected for better operationalization through intensive training and educational programs⁽¹⁸⁾.

In a Canadian study on kidney replacement therapy practices, it was observed that although most ICUs have had these treatment modalities for many years, there is no common approach regarding the way the nursing team was trained or the timing of this training, and that the nurses interviewed mentioned that the key role of nurses in the ICU is to monitor, maintain and

interrupt the therapy as well as solving any problems that arise⁽¹⁷⁾.

The educational goals for nurses who participate in the follow up of kidney replacement therapy include understanding the types of kidney failure, the types of replacement therapies, and the principles of dialysis, access sites for dialysis, administration of fluids and medications, anticoagulation, laboratory tests, as well as the way to start, maintain and end hemodialysis⁽¹⁷⁾.

As these are non-generalist actions, nephrology nurses have greater expertise to care for patients on hemodialysis. This was presented by a study that evaluated the effectiveness in practice of kidney replacement therapy by a specialized and a non-specialized team, based on the impact of patients' mortality after 28 days of dialysis treatment. It was found that the rate was significantly lower in the group of specialists when compared that of the non-specialist group ($p = 0.031$), even after adjusting for age, sex, severity score, biomarkers, risk, injury, failure, loss and end-stage kidney disease. This finding proves that a well-trained team can reduce the mortality of AKI patients undergoing hemodialysis⁽¹⁹⁾.

In view of the need for greater attention to patients during the dialysis procedure and the high number of duties for nurses in the management of ICU care to patients in general, a revision of the number of professionals is pertinent in order to ensure that the care offered for patients be safe. International studies, such as one carried out in 243 hospitals in 6 European countries⁽²⁰⁾ and another carried out in 60 hospitals in South Korea⁽²¹⁾, show that there is a direct correlation between adequate size and quality of the health care team, and the results directly involved patient safety and the quality of services offered.

However, given the high number of tasks, complications may go unnoticed or recognized in a late moment, or even not related to the procedure, due to the context and clinic in which they are inserted⁽⁹⁾, confirming what was observed in the study.

In this context, in view of the lack of information regarding the universal competencies that nursing professionals must have in hemodialysis, the following aspects are

suggested: operation of the hemodialysis machine; ability and agility to solve technical problems and in the face of complications; aptitudes for care at all moments of dialysis therapy, such as checking vital signs, treatment parameters, medication administration and solutions; management of vascular access; adjustment off low rate; and best time to discontinue the procedure⁽²²⁾. Guidance, support and training are also recommended for other professionals who operate the machines and care for patients with AKI.

According to Decree 94.406/87, in nursing care of greater technical complexity and that requires adequate scientific knowledge, immediate decision-making must be practiced exclusively by nurses⁽²³⁾. However, due to the lack of national and/or local resolution, what happens in the state of data collection is that general practitioners and nurses are responsible for the supervision of hemodialysis, while the execution is up to nephrology nursing technicians, who are the only professional who perform this procedure^(24,25).

Considering the resolutions in force in the country, nursing technicians, in general, should only help nurses in providing direct care to patients in serious conditions. It is up to them to provide operational support to nurses in the surveillance and identification of possible complications of the procedure and the patients' health⁽²⁴⁾.

In this way, it is apprehended that the content of the statements of nephrology nurses showed that competences are developed in the context of nursing care for people with AKI, but flaws in the current legislation is a point that requires further discussion with a view to strengthening safe care⁽²⁵⁾.

The research scenario stands out as a limitation of the present study, because the

research was carried out in only one Brazilian state, in only one face-to-face meeting, where the local practice of dialysis for AKI patients consists of nephrologist nurses providing remote care during dialysis therapy, so that the findings obtained may not reflect the experiences of professionals at the national level.

FINAL CONSIDERATIONS

The perceptions of nurses specializing in nephrology about the competencies needed to care for people with AKI pointed out the need for: pathophysiological knowledge of AKI, skills to operate machines, intervene in complications, accurately analyze exams, provide care for nutritional aspects, and handle catheters. It is understood that the knowledge of professionals who supervise dialysis therapy influences the clinical outcome of patients. However, the fragility of specific legislation for this audience hinders safe care.

In view of the demand for dialysis therapy in hospital environments, the aforementioned problem must awaken in the professional bodies, such as the Federal Nursing Council and the Brazilian Society of Nephrology Nursing, the need to implement a culture of presence of nephrology nurses in dialysis therapy in hospital environments. It must also contribute to the National Health Surveillance Agency to institute legislation specifically aimed at the AKI patients and no longer use the legislation of the chronic kidney patients in an adapted way, since they are completely different realities.

For hospital institutions, the implementation of continuing education measures is recommended in order to provide theoretical background and empowerment to implement preventive measures and safe conducts in dialysis therapy.

ENFERMAGEM EM NEFROLOGIA: PERCEPÇÕES SOBRE AS COMPETÊNCIAS NO MANEJO DA INJÚRIA RENAL AGUDA

RESUMO

Objetivo: compreender as percepções de enfermeiros especialistas em nefrologia quanto às competências necessárias para o cuidado a pessoas com injúria renal aguda. **Método:** estudo qualitativo, realizado com seis enfermeiros especialistas em nefrologia, tendo como técnica o grupo focal, com a questão norteadora: fale sobre suas percepções quanto às competências necessárias ao enfermeiro que cuida de pessoas com insuficiência renal aguda. Os áudios foram gravados, transcritos na íntegra e submetidos à análise de conteúdo. **Resultados:** emergiram três categorias: conhecimento fisiopatológico da lesão renal aguda como estratégia de prevenção e cuidados na pré-diálise; operacionalização e gerenciamento de máquinas durante a terapia dialítica e dificuldades para operacionalização do cuidado com transferência de responsabilidade de cuidados aos técnicos em enfermagem. **Conclusão:** conhecimento

fisiopatológico da injúria renal aguda, habilidade no manuseio de máquinas, intervenção nas intercorrências, atenção acurada aos exames, cuidados com aspectos nutricionais e manejo de cateteres são as principais competências necessárias para operacionalização do cuidado. No entanto, a fragilidade da legislação a este público dificulta a operacionalização do cuidado com segurança.

Palavras-chave: Cuidados de Enfermagem. Doença Renal. Enfermagem em Nefrologia. Pesquisa Qualitativa. Grupos Populacionais.

ENFERMERÍA EN NEFROLOGÍA: PERCEPCIONES SOBRE HABILIDADES EN EL MANEJO DE LA LESIÓN RENAL AGUDA

RESUMEN

Objetivo: comprender las percepciones de enfermeros especialistas en nefrología en cuanto a las habilidades necesarias para el cuidado a personas con lesión renal aguda. **Método:** estudio cualitativo, realizado con seis enfermeros especialistas en nefrología, teniendo como técnica el grupo focal, con el tema orientador: hable sobre sus percepciones respecto a las habilidades necesarias al enfermero que cuida a personas con insuficiencia renal aguda. Los audios fueron grabados, transcritos en su totalidad y sometidos al análisis de contenido. **Resultados:** surgieron tres categorías: conocimiento fisiopatológico de la lesión renal aguda como estrategia de prevención y cuidados en la pre-dialísis; operacionalización y gestión de máquinas durante la terapia dialítica y dificultades para operacionalización del cuidado con transferencia de responsabilidad de cuidados a los técnicos en enfermería. **Conclusión:** conocimiento fisiopatológico de la lesión renal aguda, habilidad en el manejo de máquinas, intervención en las complicaciones, especial atención a los exámenes, cuidados con aspectos nutricionales y manejo de catéteres son las principales habilidades necesarias para la operacionalización del cuidado. No obstante, la fragilidad de la legislación a este público dificulta la operacionalización del cuidado con seguridad.

Palabras clave: Cuidados de Enfermería. Enfermedad Renal. Enfermería en Nefrología. Investigación Cualitativa. Grupos Poblacionales.

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Submitted: 10/10/2019

Accepted: 06/04/2020