



NURSES' COMPETENCE TO USE PERIPHERALLY INSERTED CENTRAL CATHETERS AMONG ADULTS¹

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RESUMO

ABSTRACT: Objective: To analyze nurses' competence to use peripherally inserted central catheters among adults. **Method:** descriptive exploratory study with a qualitative approach conducted in a teaching hospital located in Goiás, Brazil. Data were collected in March and April 2017. Individual interviews were guided by a structured script and submitted to content analysis. **Results:** Fifteen nurses participated and reported insufficient knowledge and little ability to use the catheter. Six had already been trained, but only two reported implementing this procedure in their practice. Lack of training, interest, and institutional incentive were reported. The participants suggested that the institution provided support for nurses' professional qualification and sufficient personnel to encourage its use among nurses. **Conclusion:** The nurses showed weaknesses in the three pillars that determine professional competence to use peripherally inserted central catheters: knowledge, skill, and attitude. A proactive attitude is recommended, seeking professional qualification and promoting an institutional philosophy that favors continuing education to update the health staff's knowledge and ensure patient safety.

Keywords: Professional competence. Credentialing. Catheterization, central venous. Nursing care. Adult health.

INTRODUCTION

Inserting a central venous catheter is an important procedure in the treatment of hemodynamically unstable patients, as it allows the parenteral administration of large volumes of fluids and vesicant medications and makes it possible to monitor central venous pressure and venous oxygen saturation. A catheter can be directly inserted into a large vein (Central Venous Catheter/CVC) or a peripheral vein and then advanced to a central vein (Peripherally Inserted Central Venous Catheter/PICC⁽¹⁾).

Some of the advantages of PICC over CVC are: easier and safer insertion, lower risk of hemothorax, pneumothorax, or poor positioning, and a lower risk of infection and bleeding, among others⁽²⁾. The maximum time a PICC can remain in place is not well established, but it can

be used for long periods, provided there are no complications⁽³⁾. Despite its advantages, PICC is seldom used, especially among adults outside Intensive Care Units (ICUs), while few studies address PICC use among adult patients⁽⁴⁾.

The procedure to insert a PICC is complex and demands special training. In Brazil, nurses can insert PICC⁽⁵⁾ provided that they develop specific competence. Competence here refers to knowledge regarding how to perform a complex procedure (knowledge), skill (know-how), and attitude (willingness to do), and having internal and external resources applied to a given situation. Knowledge is related to having professional qualifications and certification to understand a given procedure; skill refers to an individual's ability to perform this procedure safely and skillfully; and attitude is related to one's autonomy to adhere and choose the best

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access, and apply the procedure correctly⁽⁶⁾.

Competence “is the power to act effectively in a situation, mobilizing and combining, in real-time and in a pertinent manner, intellectual and emotional resources”⁽⁷⁾, which can be observed through a worker’s performance⁽⁸⁾. Professional competence means applying knowledge and skills to obtain a certain result in a work context. It reflects what an individual can do by combining personal and environmental resources.

Considering nurses’ legal autonomy to prescribe (together with the medical staff), insert, maintain, and remove a PICC and the fact that its use is much less frequent in adult patients, this study’s objective was to analyze the competence of nurses to insert PICC among adults.

METHOD

This descriptive, exploratory study with a qualitative approach was conducted with the nurses of eight adult hospitalization wards of a large-sized public hospital located in the Brazilian midwest region, where 64 nurses worked. Fifteen of these workers composed a convenience sample.

The nurses were invited to participate in the study as they were randomly found in the service. We attempted to recruit at least one nurse from each of the units and included both those working in the morning and evening shifts. Nurses working for at least six months in the unit were included, while those on any type of leave or who could not attend the interview after three attempts were excluded.

Data were collected in March and April 2017 through individual face-to-face interviews held by one of the authors. A structured script was developed based on the literature and the study objectives to guide the interviews. The script addressed the workers’ identification, academic background, and occupational information and their knowledge, skills, and attitudes toward PICC use in their daily routine. The script also asked the nurses’ suggestions to increase adherence to this catheter’s use among adult patients. The interviews lasted 15 minutes on average, and data collection ceased when data saturation was achieved⁽⁹⁾.

Ten interviews were digitally recorded while five interviews were recorded in writing at the participants’ request. The participants validated the content of the answers to each of the questions, both in the case of written and digital records. The researchers transcribed the recorded interviews, and each participant was identified by the letter “P”, followed by a number, to ensure the participants’ information would remain confidential.

The transcriptions were submitted to Bardin’s content analysis⁽¹⁰⁾. The interviews were read repeated times to identify common patterns and aspects that characterized each report. Afterward, the material was reread to organize the answers into three categories previously established according to the pillars that constitute the competencies (knowledge, skills, and attitudes). A fourth category included the participants’ suggestions to encourage nurses’ adherence to PICC use among adults. Finally, the results were interpreted through the analysis of content contextualized with current scientific literature.

The Institutional Review Board approved the study under CAAE 51239315.4.0000.5083. All the participants signed free and informed consent forms, and the Brazilian legislation regulating research involving human subjects were fully complied with (Resolutions 466/2012 and 510/2016, National Health Council).

RESULTS

Among the 15 participating nurses, 14 were women aged between 27 and 59 (40 years on average, 14 years), with 5 to 34 years (16.07 years on average) of experience since graduation. Regarding education, five participants had completed a non-degree graduate program, and one was attending a non-degree graduate program. Three had completed a graduate program, and another six participants had both completed a degree and a non-degree graduate program.

Nurses’ knowledge regarding PICC

Most nurses reported knowing PICC; however, many responses were incomplete, uncertain, or confusing, and some reported

insufficient knowledge about the catheter:

It is a catheter that goes to the beginning of the right atrium of the heart, but it is inserted... in peripheral access. (P7).

I know you puncture the brachial spine, right? I don't know... That's all I know!... (P9).

Nine of the nurses did not have specific training to insert and make its maintenance. Of these, six showed interest in taking a course but felt impeded due to the high cost involved. One of the three who reported no interest in the course justified their extensive experience in the profession (34 years) and had no desire to learn new procedures:

I'm interested but I think it's expensive, it's a high financial investment and there was not opportunity free of charge (P15).

No, I have no interest... After so many years in the profession, having to assume another responsibility?!... (P13).

Among the six workers who had already taken the course to insert the catheter, only two considered they had the knowledge and skill necessary to perform the procedure. Another participant, even though had already received training, reported mistaken knowledge about this catheter regarding its indications and advantages:

I say to insert it in babies, because in mothers... It is not indicated to our mothers [patients]. I guess it increases the risk of infection and complications. (P12)

The participants reported that the institution did not provide training to the nurses to insert a PICC, and they have never received any incentive to take a course. Some nurses acknowledged that some managers made a personal effort to encourage their colleagues to qualify:

No, the truth is that there is no incentive at all (P13).

The managers always talk about the importance of this procedure and training... (P14).

One nurse recalled the hospital once offered training on the insertion and maintenance of PICC, specifically among newborns. All the nurses working with these patients were

encouraged to participate, and most received training:

Yes... [...]they were encouraged, you know? Everyone attended it! [...]our boss talked about how babies would benefit, and then, everyone made an effort and took the course. The hospital paid it and everyone attended it! (P12).

Ability to insert PICC

Most of the interviewees did not use PICC in their daily practice. Among those who had the qualification to do it, only two reported performing the procedure regularly. Another two reported not doing it for feeling insecure and due to difficulties concerning the context of their units:

[...]when it is obstructed, 90% of the times, you lose the catheter! The maneuver using a syringe with a saline solution to flush the line usually does not work because the catheter is long. [...]Because it is expensive, it is technically complex, and demand time... And, because it is novelty there is a lack of adherence in the whole team[...]So, I stopped inserting it. I'd insert it one day and they'd lose it on the next (P8).

[...]the demand in the emergency[...]is high, severe patients... You won't have the time to stop and insert it (P14).

Three nurses ratified that knowledge alone does not suffice to confer professional competence to perform the procedure. Skill is also necessary, which is translated into confidence/security to perform the procedure:

After I took the course, I must have inserted a PICC twice. [...]Inability because of the long time I don't insert it... I don't feel confident to do it(P1).

Alone? no! I have already inserted it three times with a friend, but I don't feel confident enough (P11).

Workers' attitude toward PICC

Only two of the six nurses who had already taken a specific course to insert PICC used the catheter in their daily practice, inserting one catheter a week on average. The reasons for not using it routinely varied:

[...]only among babies. Because of the... difficult access. They are too delicate to puncture many times! (P12).

[...]in the clinic, the experience I had with PICC wasn't good! [...] when it obstructs, 90% of the times you lose it[...]because it is expensive, technically complex, and demand time[...].So I stopped inserting it! (P8).

Among the workers who had not taken any training to insert PICC, the main reason for not using in their care practice was a lack of knowledge and skills. They also did not show interest in seeking qualification to improve their practice. One of the interviewees reported the need for the entire team to be equally trained to perform the procedure successfully:

[...]I don't have training, and the demand in the clinic does not require it... (P6).

I don't have the course and even if I had, I wouldn't insert it. The technicians aren't even able to take care of the peripheral catheters and if I installed it, it would be wasted! (P13).

It became clear that the units made the material necessary to insert and maintain PICC available. One worker did not know to inform whether there was material in the clinic while another worker recognized that, even though it is not always readily available in the unit, the hospital does provide the material upon request:

Never saw it... If there is it, I haven't seen it(P15).

It is not always available here at the unit, but if you need it [...], you can make a request (P7).

In the participants' opinion, the use of PICC among adults outside ICUs is less frequent than the use of CVC, and the reasons include the insufficient number of nurses to assume this responsibility; the low number of nurses; lack of training and interest on the part of workers; the small number of requests for this procedure; and to ensure patients' comfort:

[...]a matter of training and workers' lack of interest[...]. There are many nurses who[...] become worn out[...]and think this is an additional responsibility... (P7).

It is a large demand to very few workers!... (P12).

Lack of nurses' sensitization, lack of knowledge, of realizing how much it is important and that it has a lower risk of complications than the central catheter (P2).

[...]the nurses[...]don't try to update their knowledge, learn, insert it... [...]it's an expensive catheter and a procedure that is a bit unpleasant for patients[...]It imposes restrictions to patients! [...] and the team as a whole is not prepared for it... (P8).

The workers also raised other issues that contribute to lack of adherence to PICC among adults outside ICUs, such as lack of training on the part of the health care team, which results in little knowledge of when it is indicated and its advantages, medical hegemony, which determines the choice of the CVC over PICC, and a lack of an institutional policy that encourages and promotes more extensive use of PICC in all inpatient units:

[...]you have to invest in the training of nurses (P13).

[...]because the physicians think that the intracath is more efficient[...], that we will assume something that is their job... There is much resistance!... (P3).

[...]there is no dissemination of information.[...]many workers, nurses who do not know PICC[...], they think that only physicians can perform this procedure, they think it is absurd that nurses can perform it... (P9).

Suggestions to encourage adherence to PICC among adult patients

In the nurses' opinion, the initiative to acquire this specific qualification is personal, but they would like to see some incentive on the part of the institution because even though their immediate superiors would release them to take the course, its cost is inaccessible for most:

[...] workers should get incentives. [...] you have to be interested. We are interested, but our salary is not sufficient to pay for it... So, we wait for an opportunity!... (P9).

To encourage adherence to PICC among adult patients outside intensive care units, nurses suggested managers changed the institutional policy, provided continuing education to workers, and that the institution financially

supported courses and encouraged the entire team to participate, provided an adequate number of nurses, and clarification regarding PICC to the medical and nursing staff, and patients:

[...]if you have an institutional policy, training, and professionals are sensitized of everything that is needed... It has to be a multi-professional effort! [...]it's a macro thing, considered from the perspective of the institution! (P7).

[...]more workers to share tasks and nurses have to have the time to insert it(P1).

[...]training to the entire staff, in all the shifts and more rigorous supervision. The medical staff should receive training [...]regarding the PICC's benefits [...]and patients should receive education too... (P8).

[...]I didn't have classes about it during college, how do we do it, how important it is... It needs to be clear in our minds! (P3).

Nevertheless, there were workers contrary to any intervention intended to implement this catheter among adult patients outside ICUs:

I don't have any suggestions! I think nurses should not assume this responsibility! They already have plenty on their plates! Nurses cannot supervise even the peripheral catheters, let alone being responsible for another one?!... (P13).

DISCUSSION

The world is continually transforming, and the job market demands increasingly updated and competent professionals⁽⁶⁾. The dimensions (knowledge, skill, and attitude) involved in the development of competencies are inseparable, and the nurses themselves report insufficient knowledge and, as a result, little or no ability to perform the procedure. Almost all the nurses reported insufficient knowledge regarding PICC and little or no skills to insert it, with no attitude to acquire this competence.

Even though all the nurses reported knowledge of PICC, four could not provide the concept of it. Most (11) only knew it is a peripherally inserted central catheter, and even though one of them (P1) claimed having taken the course, s/he was unable to define it correctly. Only two of the six professionals who received specific training correctly discussed the concept

and its indications.

Regarding the use of PICC in the nurses' professional practice, only three of the six nurses with training ensured they could insert it, while one of them reported having lost the ability for not having used it for some time. The other two used it routinely, inserting one per week on average. The other three said they could not insert or handle the catheter.

The reports showed that taking a training course alone does not ensure competence. Many reported having "lost" their ability, and their knowledge was no longer sufficient. It seems that knowledge is slowly forgotten when not regularly applied. Furthermore, the triad of knowledge, skill, and attitude formed by this triad seems to become a vicious circle: there is no attitude or skills, and knowledge is outdated.

For this reason, attitude is an essential component of competence, that is, willingness to do. When an individual desires to improve his/her practice and believes that specific behavior may help in the process, one seeks knowledge and acquires the skills for it. It is noteworthy that the results show the nurses' attitude, or rather, lack of attitude. Even though they claim to be interested in qualifying, they show apathy and accommodation, letting the institution determine what they should know/do.

The literature shows that, in general, competencies are more easily understood than executed, suggesting that other factors, in addition to knowledge, influence nurses' competencies⁽¹¹⁾. Even though they recognize the catheter's utility, the interviewees have restrictions against its routine use among adult patients outside ICUs. Their arguments mainly suggest the professionals are not proactive because they do not seek to improve their knowledge and technical skills.

It is important to understand that continually updating knowledge is indispensable for professional performance. Not having learned a specific procedure/technique during the undergraduate program does not exempt a professional from learning it if such a procedure can improve performance. Workers can seek new knowledge independently or work with the institution to provide the means and conditions for employees to qualify. However, waiting for superiors to determine what one should or

should not do to improve performance shows a lack of autonomy.

Even though the cost of materials directly impacts an institution's financial resources, it should not impede its use if it represents a better risk-benefit ratio. Even though there are contradictions and conflicts among researchers regarding PICC, a recent study reports a superior cost-benefit relationship among patients who need prolonged intravenous therapy compared to CVC⁽¹²⁾. In addition to the fact that PICC results in fewer and less severe complications for patients, adequately trained nurses can insert it, dispensing physicians' work. The costs resulting from the improper use of material, especially on the part of not qualified workers, considerably impact hospitals' budgets⁽¹³⁾.

Hence, it is questionable the institutions' attitude of making materials available without considering the proper qualification of most of its employees. This behavior favors material waste due to its inefficient use or expiration date. Researchers recommend interventions intended to reduce PICC's inefficient use, considering the costs and potential complications associated with this catheter placement⁽¹⁴⁾.

Those responsible for buying supplies should be aware that the inclusion of new material should be analyzed considering factors other than its direct costs, ensuring patient and worker safety, its benefits, and workers' competence to use it⁽¹⁵⁾. Managers should be oriented both by decreased costs and patients' health⁽¹³⁾; however, financial issues should not overlap aspects such as the quality and safety of care delivery⁽¹⁵⁾.

Another factor to consider is that the introduction of new technical procedures/therapies intended to replace others already established among health workers requires, in addition to training, the development of new concepts based on sound theoretical references supported by the institution's philosophy and policies. CVC remains a well-established alternative among health workers to be used whenever central venous access is needed. However, its insertion is the physicians' exclusive responsibility, and changing it is not easy or fast, as it presupposes taking the decision power from physicians and empowering another professional, in this case, nurses, to make decisions in a field previously under the

physicians' domain.

Another relevant aspect is the training of health workers, which should focus on what is best for patients, regardless of remaining aspects, including the power conferred to one or another worker. Hence, when choosing a central catheter, physicians should consider patients' therapeutic needs instead of fear of complications⁽¹⁾.

Regarding the health institutions' care policies, patients' benefit should guide their work philosophy, considering that competent professionals are vital when seeking quality care delivery. Establishing a partnership with education institutions, where there is an environment that is conducive to the development of these competencies, can be a wise alternative to integrate the demands of the job market and the training of qualified, innovative workers who transform their context and are prepared to work in a globalized world⁽¹⁶⁾.

The implementation of PICC by a specialized team led by nurses, using good quality material, maintenance protocols, and implementing initiatives to improve quality continually may decrease significant complications such as catheter-related bloodstream infections and deep vein thrombosis^(17;18). Analyzing 3,479 PICC placements during the hospitalization of general internal medicine patients, totally adequate placements were found in only slightly over half (53%) of the patients⁽¹⁴⁾.

Therefore, institutions are supposed to provide the material and equipment necessary to enable workers' good performance and invest in training programs, which are essential for developing the competencies necessary for professional practice and continuing education to update practices⁽¹⁸⁻²⁰⁾. The best device's choice should be guided by the most recent evidence, presenting a low frequency of complications when guidelines are followed⁽¹⁾. Health workers play an essential role when choosing devices to be used among patients, and appropriate knowledge regarding the different procedures enables providing better quality care⁽²¹⁾.

In addition to ensuring the quality of the material required and training nurses to use PICC, institutions also need to establish its use as an additional alternative to care for patients.

In this sense, a protocol guiding nurses' practice regarding this catheter is a vital instrument to standardize PICC use and improve the quality of care delivery^(20;22). This change process should be based on the qualification and information of all health staff members regarding the indications, maintenance, and advantages of PICC over CVC and encourage the autonomy of nurses to make decisions about its use⁽¹⁹⁾.

It is important to adopt strategies that favor physicians understanding that they are not losing but sharing a task, and the time they can save for not having to insert a CVC can be used in other medical tasks. The nurses should assume the responsibility for prescribing, inserting and maintaining PICC and understand this is a necessary innovation to improve the quality of practice and make an effort to acquire and develop this competence.

Finally, choosing the type of central venous access based on economic restrictions or lack of professionals' competence may lead to the selection of methods that represent greater risk or suffering for patients. Nurses are responsible for assessing and choosing the most appropriate nursing conduct for each patient, preventing complications, and disseminating the practice⁽⁴⁾.

CONCLUSION

The use of PICC among adults hospitalized in the facility addressed here is still restricted, and the nurses have limited knowledge concerning its indication, insertion, and management. Few nurses showed the skills and attitude required to use this catheter among adult patients. Less than half (six) of the participants received training, but almost all reported not being sufficiently confident to perform it due to its complexity, lack of time, work overload resulting from insufficient personnel, lack of training on the part of the nursing staff to monitor and maintain it, or its high cost.

The actions suggested to encourage the use of this catheter among adults include adopting an institutional policy that encourages its use, investment in the qualification of nurses and the nursing team to manage PICC, adjust the number of nursing personnel to the needs of the service, and clarify/encourage the medical team regarding this device's use and benefits. Improving the training of health workers, especially nurses, was also recommended.

Identifying weaknesses regarding the technical competence of workers to use PICC among adults can sensitize nurses regarding the need to reflect upon their professional performance and the importance of acquiring new competencies to improve the quality of the care provided. Hence, we reinforce the importance of proactive behavior on the part of workers to seek professional qualification in general, specifically training to insert a PICC whenever this is the most appropriate choice for a patient.

Another expectation is that hospitals use the results and evidence produced by scientific research to support their work philosophy's reorientation. It is a known fact that workers' qualification is an important ally within institutions to promote the quality of health care. For this reason, health facilities need to reorganize their professional practices, implement continuing education to qualify workers, and establish guidelines to ensure patient and worker safety and ethical principles such as justice, benefit, and non maleficence.

This study does not allow for the generalization of results due to the restricted number of participants and institutions addressed here. However, it presents important indicators for this context, contributing to expand the knowledge of other services with a similar context regarding the problem in question, supporting decision-making to improve the quality of services.

COMPETÊNCIA DE ENFERMEIROS PARA USO DO CATETER CENTRAL DE INSERÇÃO PERIFÉRICA EM ADULTOS

RESUMO

Objetivo: Analisar a competência de enfermeiros para uso do cateter central de inserção periférica em adultos. **Método:** Estudo descritivo exploratório com abordagem qualitativa realizado em hospital de ensino de Goiás. Os dados foram coletados em março e abril/2017, por meio de entrevista individual norteada por roteiro estruturado e submetidos a análise de conteúdo. **Resultados:** Participaram 15 enfermeiros, que mostraram conhecimento insuficiente e referiram pouca habilidade para usar o cateter. Seis já tinham sido treinados, mas apenas dois afirmaram realizar o procedimento

em sua prática. Alegaram falta de treinamento, de interesse e de incentivo institucional, hegemonia médica e sobrecarga de trabalho, entre outros. Para aumentar a adesão dos enfermeiros ao uso do cateter, os participantes sugeriram incentivo institucional para qualificação profissional e adequação do número de enfermeiros na assistência. **Conclusão:** Os enfermeiros demonstraram fragilidade nos três pilares que determinam competência profissional para uso do cateter central de inserção periférica: conhecimento, habilidade e atitude. Recomenda-se atitude proativa em busca de qualificação profissional e uma filosofia institucional de educação continuada, para manter atualizada a equipe de saúde e garantir a segurança do paciente.

Palavras-chave: Competência profissional. Qualificação profissional. Cateterismo venoso central. Cuidados de enfermagem. Saúde do adulto.

COMPETENCIA DE ENFERMEROS PARA USO DEL CATÉTER CENTRAL DE INSERCIÓN PERIFÉRICA EN ADULTOS

RESUMEN

Objetivo: analizar la competencia de enfermeros para el uso del catéter venoso central de inserción periférica en adultos. **Método:** estudio descriptivo exploratorio con abordaje cualitativo realizado en un hospital de enseñanza de Goiás-Brasil. Los datos fueron recolectados en marzo y abril/2017 por medio de entrevista individual basada por guion estructurado; y sometidos al análisis de contenido. **Resultados:** participaron 15 enfermeros, que demostraron conocimiento insuficiente y relataron poca habilidad para usar el catéter. Seis ya habían sido entrenados, pero solo dos afirmaron realizar el procedimiento en su práctica. Alegaron falta de entrenamiento, de interés y de incentivo institucional, hegemonía médica y sobrecarga de trabajo, entre otros. Para aumentar la adhesión de los enfermeros al uso del catéter, los participantes propusieron un fomento institucional para la calificación profesional y adecuación del número de enfermeros en la asistencia. **Conclusión:** los enfermeros demostraron fragilidad en los tres fundamentos que determinan competencia profesional para el uso del catéter central de inserción periférica: conocimiento, habilidad y actitud. Se recomienda una actitud proactiva en la busca de calificación profesional y una filosofía institucional de educación continuada, para mantener actualizado al equipo de salud y garantizar la seguridad del paciente.

Palabras clave: Competencia profesional. Habilitación profesional. Cateterismo venoso central. Atención de enfermeira. Salud del adulto.

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