

**VALIDATION OF AN INSTRUMENT FOR ASSESSMENT OF THE PROFESSIONAL
KNOWLEDGE ABOUT HYPODERMOCLYSIS****VALIDAÇÃO DE INSTRUMENTO PARA AVALIAÇÃO DO CONHECIMENTO
PROFISSIONAL ACERCA DA HIPODERMÓCLISE****VALIDACIÓN DE INSTRUMENTO PARA EVALUACIÓN DEL CONOCIMIENTO
PROFESIONAL ACERCA DE LA HIPODERMOCLISIS**

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ABSTRACT

Objective: to validate an instrument related to the knowledge of health professionals about hypodermoclysis. **Method:** methodological research conducted through content and appearance validity. Validation was carried out by a group of five experts on the subject. Subsequently, a pilot test was carried out with six health professionals. It was considered 70% of agreement as index of validity. **Results:** The instrument showed satisfactory results in the content and appearance validation process and could be confirmed for use. **Conclusion:** the instrument was well evaluated and the notes were analyzed with a view to improvement and enhancement. Its use may support the researcher in the assessment of professional knowledge about hypodermoclysis.

Descriptors: Hypodermoclysis; Knowledge; Validation Studies.

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RESUMO

Objetivo: validar instrumento relativo ao conhecimento dos profissionais de saúde em hipodermóclise. **Método:** pesquisa metodológica conduzida por meio de validade de conteúdo e aparência. A validação foi realizada por um grupo de cinco *expertises* na temática. Posteriormente, procedeu-se com a aplicação do teste-piloto realizado com seis profissionais de saúde. Considerou-se 70% de concordância como índice de validade. **Resultados:** o instrumento demonstrou resultados satisfatórios no processo de validação de conteúdo e aparente, podendo ser confirmada para a utilização. **Conclusão:** o instrumento construído foi bem avaliado e os apontamentos levantados foram analisados com vistas à melhoria e aperfeiçoamento. Sua utilização poderá respaldar o pesquisador na avaliação do conhecimento profissional acerca da hipodermóclise.

Descritores: Hipodermóclise; Conhecimento; Estudos de Validação.

RESUMEN

Objetivo: validar instrumento relativo al conocimiento de los profesionales de salud en hipodermóclisis. **Método:** investigación metodológica conducida por medio de validez de contenido y apariencia. La validación fue realizada por un grupo de cinco *experises* en la temática. Posteriormente, se procedió con la aplicación del test piloto realizado con seis profesionales de la salud. Se consideró un 70% de concordancia como índice de validez. **Resultados:** el instrumento demostró resultados satisfactorios en el proceso de validación de contenido y aparente, pudiendo ser confirmada para la utilización. **Conclusión:** el instrumento construido fue bien evaluado y los apuntes levantados fueron analizados con miras a la mejora y perfeccionamiento. Su uso podrá respaldar al investigador en la evaluación del conocimiento profesional acerca de la hipodermóclisis.

Descritores: Hipodermocclisis; Conocimiento; Estudios de Validación.

INTRODUCTION

The current scenario, with the aging population and the increasing incidence of chronic-degenerative diseases, corroborates a progressive quantitative of patients needing palliative care. This public often requires alternative routes for the clinical support, since they present conditions that preclude the administration of drugs (such as vomiting, diarrhea, dyspnea and others) and adequate maintenance of the levels of

hydration and oral nutrition.¹ In this context, hypodermoclysis technique is recognized as a safe and feasible alternative to drug administration.²

The hypodermoclysis term refers to the use of subcutaneous (SC) route for continuous infusion of larger volumes of solutions, being reported since 1836.³

This technique presents numerous advantages, such as: low cost, reduced fluctuation in plasma concentrations of opioids, rare local complications, low risk of systemic adverse effects, easy insertion

and maintenance.⁴ However, even with the benefits mentioned above, SC route remains underutilized by professionals, namely doctors and nurses.⁵

The use of HDC is still recognized as a feasible technology tool in the care in Primary Health Care and Home Care, shifting the hospital-centered view, as it is practicable in home care, since it does not require direct supervision by the professional, in addition to low rates of infection.⁶

Although it is an ancient technique, SC therapy is little known and used nowadays, which can be attributed to the limited distribution of this technique, as well as the low knowledge of the team.⁷

Based on these considerations, the aim of this study was to validate a suitable measuring instrument as covering a series of qualitative and quantitative attributes, as regards the professional knowledge about hypodermoclysis. The construction and validation of an instrument that measures variables related to hypodermoclysis practices (Knowledge, attitude/practice, commitment and self-efficacy) of the assistance professionals is of paramount importance, since it represents a health management tool and can be useful for diagnosing the weaknesses related to knowledge, skills and self-efficacy of the

health professionals in prescription and use of hypodermoclysis in health care. In addition, it can enable specific educational strategies directed to the care team; measure the results of interventions and thereby improve the adhesion of this practice, considering its many advantages, related to insertion and maintenance, low cost and rare local complications.⁴

The validity can be defined as the ability of an instrument to measure accurately the phenomenon being studied. The evaluation of the instrument can be done in several ways, such as: content validity, construct validity and criterion validity. Thus, it has in apparent validity the assessment of appearance and the clarity with which the content was expressed; and in content validation, items built representing the universe on the subject.⁸

A good instrument for measuring features, besides a good psychometric quality (with detailed records on the calculation of its validity and reliability and the quality parameters of the test items), it must also be very useful and have clinical relevance, practicality, good acceptance, clarity of instructions, can be easily understood and have a global approach to the construct assessed.^{9,10} In addition, authors point out that in choosing an instrument for the purpose of clinical

screening and therapeutic evaluation, one should pay attention not only for its validity and reliability, but also to the sensitivity and responsiveness of the instrument.¹⁰

It was not identified in the national literature studies that built and validated any suitable measuring instrument as covering a series of qualitative and quantitative attributes of knowledge assessment of health professionals about hypodermoclysis. Thus, the validation of a tool that serves this purpose may contribute to the health services that wish to implement this routine in assistance, as well as to improve the quality of care.

METHODOLOGY

This methodological study was conducted from January to March 2017 and was developed by apparent and content validation, followed by a pilot test.

The first step was made by the analysis of a panel of five judges, expertise in the subject. The contact with the professionals was conducted via e-mail, through a letter of invitation. After acceptance, the Term of the Informed Consent (IC) was sent, for signing, the Informed Consent was sent after being informed and the instrument to be assessed,

with voluntary participation.

The validation of the instrument relating to the professional knowledge about hypodermoclysis considered the response categories for each item, being evaluated according to the following criteria for developing tools that are: objectivity, simplicity, clarity, relevance and precision.¹³ Of the 12 criteria to tools development, five were selected for best expressing the objectives and evaluation purposes.

For response analysis, an instrument of content and appearance validation was done, with questionnaires and tables for the judges to check the compliance options of the answers on the items of the instrument, with the ideal level of agreement being considered as 50-80%¹⁴⁻¹⁵ After this assessment, the instrument was returned to the researcher for analysis, prioritizing the percentage of correlation responses.

After validation, the pilot test was applied in order to verify the interpretation of the questions addressed, so to avoid understanding duplication. The pilot test was given to ten professionals crowded in the Better at Home Program from another district of Uberlândia, returning six of them.

The statistical treatment of data was through a preparation of a database in an electronic data sheet, Excel Microsoft®

XP® program, encoding each of the variables. Then, data were imported into the Statistical Package for the Social Sciences (SPSS) application, version 22, for statistical analysis.

To evaluate the correlation among the judges, in the content and apparent validation, frequencies and percentages of the responses were calculated. The former is used for nominal variables and the results can be expressed by two or more categories; the second, to ordinal variables and the results can be expressed by more than two categories. These measures have the minimum value as zero, indicating no agreement, and one as the maximum value, indicating absolute agreement. Categorical variables were analyzed using absolute and frequency measures. Quantitative variables, analyzed using measures of central tendency and variability.

This research is part of a larger project entitled "Knowledge of nursing and medical staff of home care and support regarding hypodermoclysis" and was

approved by the Research Ethics Committee (CEP) of the Federal University of Triângulo Mineiro (UFTM) under the Opinion No. 1,884,844, respecting the principles of the Resolution No. 466/12 of the National Health Council that regulate the research activities with human beings.¹³

Having all the instruments, the final version of the validation tool was reached.

RESULTS

All of the five subject expertises (100%) were PhD nurses. Of these, one (20%) works with palliative care and pain; one (20%) with perfusion therapy; one (20%) is a nursing professor; another (20%) works in the continuing education service in Nursing and other (20%) in hospital care and public health. The average training time is 19.2 years, with a minimum of 16 and maximum of 31 years.

In Table 1, below, data regarding content validation are shown.

Table 1 – Content validation of the instrument regarding the professional knowledge about hypodermoclysis. Uberaba-MG, 2018.

	Knowledge		Competence		Technique		Capacity
	n	%	n	%	n	%	n
Keep	3	60	3	60	5	100	4
Delete	0	0	0	0	0	0	0
Change	2	40	2	40	0	0	1

Regarding the knowledge, the following items were asked: whether you have heard about hypodermoclysis, concept, indications, contraindications, puncture sites, complications, time of permanence of the puncture device, maximum daily volume and benefits. Of the two judges who requested change, both justified as the topics on maximum daily volume were divergent in literature. Thus, the alternative "up to 1,000ml" and the expression "generalizing puncture site" were inserted.

On the skills, the questions were about the professional responsible for the appointment and the puncture. Of the two professionals that required amendment, one (50%) outlines that the term "indication" is replaced by "prescription", that was adopted, and other (50%) to consider the possibility of the existence of an institutional protocol, being inserted this option in the response alternatives.

Regarding the technique, the items discussed: whether the technique is used in

the Better at Home Program, what the use (or not) of this via in their workplace is attributed to, technique used in another workplace, what the use (or not) of this via in another workplace is attributed to, you use the technique and how often you have held hypodermoclysis. All judges agreed to keep the items, and no changes were made.

Finally, with regard to capacity, the approach was: ability to explain the procedure to another professional, experience of failure and/or success with the technique, have doubts and whether the professional feels able to do it. One (20%) judge asked for a review of response options, for not being considered technical, so, in the question of the issue the term "technical" was replaced by "hypodermoclysis" and the answer choice "other" was added.

As regards the content validation, the variables were recoded, being considered the items "strongly agree" and "partially agree" as "agree" and "neither agree nor disagree," "disagree" and "strongly

disagree" as " disagree" (Table 2).

Table 2- Content Validation on the instrument of professional knowledge. Uberaba-MG, 2018

Items	Expert opinion									
	Objectivity		Simplicity		Clarity		Relevance		Precision	
	Agree n (%)	Disagree n (%)								
Have you heard about HDC *?	5 (100)	0 (0)	5 (100)	0 (0)	4 (80)	1 (20)	5 (100)	0 (0)	5 (100)	0 (0)
What is HDC?	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)
Indications	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)	4 (80)	1 (20)
Absolute contraindications	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)	4 (80)	1 (20)
Relative contraindications	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)	4 (80)	1 (20)
Puncture sites	5 (100)	0 (0)	5 (100)	0 (0)	4 (80)	1 (20)	4 (80)	1 (20)	3 (60)	2 (40)
Complications	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)	4 (80)	1 (20)
Responsible for prescribing	4 (80)	1 (20)	4 (80)	1 (20)	4 (80)	1 (20)	4 (80)	1 (20)	4 (80)	1 (20)
Responsible for puncture	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)	4 (80)	1 (20)
Time of permanence of the needed device	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)	4 (80)	1 (20)
Time of permanence of the non-needed device	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)	4 (80)	1 (20)
Device to be used to puncture	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)	4 (80)	1 (20)
Maximum volume infused in 24h	4 (80)	1 (20)	4 (80)	1 (20)	4 (80)	1 (20)	4 (80)	1 (20)	4 (80)	1 (20)
This technique is used in the Better at Home Program?	4 (80)	1 (20)	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)
What do you	4 (80)	1 (20)	4 (80)	1	5	0	5 (100)	0 (0)	4 (80)	1 (20)

Items	Expert opinion									
	Objectivity		Simplicity		Clarity		Relevance		Precision	
	Agree n (%)	Disagree n (%)								
attribute the use of this via in the Better at Home Program to?				(20)	(100)	(0)				
What do you attribute the non-use of this via in the Better at Home Program to?	4 (80)	1 (20)	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)	4 (80)	1 (20)
Is this technique used in your other work environment?	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)
What do you attribute the use of this via in your other work environment to?	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)	4 (80)	1 (20)
What do you attribute the non-use of this via in your other work environment to?	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)	4 (80)	1 (20)
Do you perform the technique?	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)
How often have you performed HDC puncture?	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)
Do you consider having technical skill to explain the procedure to other professional?	5 (100)	0 (0)	4 (80)	1 (20)	4 (80)	1 (20)	5 (100)	0 (0)	4 (80)	1 (20)
Have you ever experienced/ met some experience of failure in the use of HDC?	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)
Have you ever experienced / met some successful experience in	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)	5 (100)	0 (0)

Items	Expert opinion									
	Objectivity		Simplicity		Clarity		Relevance		Precision	
	Agree n (%)	Disagree n (%)								
the use of HDC?										
Do you have any questions about the HDC?	4 (80)	1 (20)	5 (100)	0 (0)	4 (80)	1 (20)	5 (100)	0 (0)	4 (80)	1 (20)
Do you think you are able to perform the technique?	5 (100)	0 (0)	4 (80)	1 (20)	4 (80)	1 (20)	5 (100)	0 (0)	4 (80)	1 (20)

Note: *hypodermoclysis

Thus, it can be noted that the only item on the accuracy of the puncture site had percentage lower to 80% of agreement.

Then, the referees were asked whether there were any needed item that was missing in the instrument. Three (60%) said no and two (40%), yes. Among the missing ones, there were: dressing (material, exchange period and stability), precautions for handling and administration form. It is noteworthy that such items were addressed at another time of the survey and, therefore, have not been added to the instrument regarding the professional expertise.

Subsequently, it was asked whether there were unnecessary questions, with four (80%) judges saying no and one (20%), yes, concerning the items for the Better at Home Program, have not been considered the withdrawal suggestion of them. Such

questions referred to the use of the technique in the workplace, being possible to be applied to any work unit. Finally, there was asked whether there were any comments or suggestions; three (60%) did not have and two (40%), yes. One requested the replacement of the term "indication" by "prescription" in the case of health professionals and the addition of the phrase "by puncture site" with regard to volume; both considerations were met. The other referee suggested the withdrawal of the options "veins" and "arteries" in the puncture sites, having it not been adopted, since in the item relating to the concept of hypodermoclysis, it was one of the answer options.

In the step regarding the implementation of the pilot test, six (60%) instruments were returned, because there were two nurses away for health reasons,

and a nurse and a doctor found themselves on holiday.

DISCUSSION

Although nurses are the most used in drug administration and/or hydration therapies, studies show that the adherence of health professionals about the hypodermoclysis technique is still limited, even with numerous benefits.⁵ This can be attributed to its limited diffusion, as well as the low theoretical and practical knowledge of the team, suggesting practical evaluation of the execution of the procedure and the development of specific strategies for nurses' monitoring, in order to avoid delay of their knowledge on the subject.

The instrument developed and validated refers to the professional knowledge about hypodermoclysis on two occasions: before and after performing the intervention. The development of a new instrument is considered a complex task, as it requires the participation of different knowledge. In this sense, it is recommended that the researcher is aware of the existence of thematic instruments, since they may respond to similar goals with the proposal.¹⁶

As regards the pilot test, although not any of the professionals have done considerations at the end of the instrument,

it was possible to note some filling errors that have allowed to identify gaps and make changes, especially in marking more than one answer in the items that asked only one. In order to minimize these mistakes, it was highlighted on the issue, in capital letters, that only one or more answer choices should be marked.

As for item "maximum volume allowed by puncture site", it is found in the pre-intervention phase that 09 (39.1) hit the item, and after the intervention, there is a 100% increase in hit rate; 18 (78.3) in relation to the maximum volume per day, by puncturing site. There are references which provide for up to 1,000ml/24h, others, 1,500ml/24h.^{17,4,18,19} In both cases, without discriminating locations. However, in this study, it was decided to show the Brazilian Society of Geriatrics and Gerontology³, in which the maximum volume per day, by puncture site, ranges from 250 to 1,500ml. One must also consider about the topic maximum volume, which are currently allowed two puncture sites²⁰.

It would also be worth considering about the drug prescription, since the prescribed doses are similar to those used intravenously; however, the onset of action is equivalent to the oral route.²¹

Hypodermoclysis can be implemented in people who need clinical

support for fluids, electrolytes and medication replacement. It can also be used as a first option of choice, depending on the client's clinical condition, the fluid and/or medication to be administered, the infusion rate and volume.^{4,18,19,3}

An example of volumes replacement through hypodermoclysis is the (re)hydration. A systematic review research carried out in 2018²², noted that this technique is considered as effective as the one performed intravenously and may be used for treatment of mild to moderate dehydration, the loss of fluid secondary to diuretics, vomiting and diarrhea.

The author also emphasizes that dehydration is a very common problem among the elderly and is related to high morbimortality. Since dehydration can cause the appearance of confusion and delirium, the decreased intravascular volume and glomerular failure, leading to renal failure, and, therefore, the enhancement of toxic effects of medications which are being administered. In addition, dehydration also enhances the risk of constipation and the emergence of pressure injuries. With the optimization of hydration, complications and prolonged hospitalizations can be prevented.

It is considered safe for subcutaneous use the isotonic solutions such as sodium

chloride 9% (0.9% saline) and glucose physiological solution 5% (0.5% FMC). The 0.45% NaCl solution is hypotonic, but well tolerated.²²

It should be noted that the use of subcutaneous route can be implemented both in the hospital environment and at home, thus bringing more convenience and comfort to the patient and his family. It allows better adherence to treatment by the possibility of this to occur at home, easy handling and little complexity. Scientific studies^{17,4,18,19} show its viability, effectiveness and low risk of infection; It is an alternative therapy that, in addition to offering many benefits to the client, optimizes the assistance of the nursing team.²³

In this sense, professionals must acquire theoretical and scientific knowledge, as well as practical on hypodermoclysis to minimize possible mechanical, tissue trauma, among others, and thus promote comfort, reducing the stress and pain by unsuccessfully repeated punctures for the infusion of fluids and medicines, in addition to greatly decrease the risk of infection.²³

It is noteworthy that both the puncture as the administration of fluids in hypodermoclysis may be delegated by the nurse to the members of the nursing team,

provided they are qualified, trained and skilled.²⁴ Currently, it is still prevalent the need for a prescription for carrying out the procedure^{25,26}, although the nurses having their autonomy guaranteed to its indication.²⁴ Thus, realizing the possibility of performing the puncture subcutaneously, it should be discussed with the medical team so that they prescribe it.

Taking into account the need for the medical professional to carry out this practice, it is also relevant to consider the training of these professionals. In this sense, a study carried out in Switzerland revealed that over 10% of physicians reported ever having seen what subcutaneously medications were currently authorized. In addition, this study identified a divergence between the medical staff and nurses to respect the preparation and administration of fluids, reinforcing the need for improving the technical and scientific knowledge related to this technique and ability measurement.²⁷

Thus, it is argued that this study goes to the purpose of the objective, by providing a comprehensive and viable instrument to be applied to healthcare professionals for evaluation of knowledge in hypodermoclysis, enabling its implementation and subsequent improvement in the provision of care in Brazilian health services.

CONCLUSIONS

As it is a simple and safe procedure, when well indicated, the use of hypodermoclysis can be implemented both in hospitals and home care as a form of assistance to compose the range of the care options in client's, family's, health professional's and institution benefit.

It argues that as difficulty, this was referred to the divergence still found in the national literature about the general guidelines on the use of HDC. Therefore, it was decided to use as a reference the manual of the Brazilian Society of Geriatrics and Gerontology.

Thus, it is considered that the instrument has content and appearance of validity and, therefore, is able to evaluate the knowledge of health professionals about hypodermoclysis. Thus, the validation of a tool that serves this purpose may contribute to the health services that want to implement this routine in care, as well as to improve the quality of care.

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