

Table S1. Loading factors from the exploratory factor analysis for the NURSPeM.

Questionnaire 1: Self-perceptions about safe medication management

Safety in drug prescription								
		Dimension 1	Dimension 2	Dimension 3	Dimension 4	Dimension 5	Dimension 6	Dimension 7
1	How often do you know the most common dose of the drugs you administer to patients?	.791						
2	How often do you know the most common prescription of the drugs you administer to patients?	.740						
3	How often do you know the most common route of the drugs you administer to patients?	.653						
4	In general, do you feel confident about performing drug calculations?	.466						
Familiarity with pharmacological concepts								
5	To what extent are you familiar with the expected effects of the drugs that you administer to patients?		-.448					
6	To what extent are you familiar with the specific care or monitoring that a patient requires according to the drug you administer?		-.761					
7	To what extent are you familiar with the side effects of the drugs you administer to patients?		-.711					
8	To what extent are you familiar with the possible interactions that may exist between the drugs you administer to patients?		-.495					
Relevance for professional practice								
9	Rate the following statements according to the importance you believe they have for your professional practice:							
9.1	• Knowledge about drug effects			.556				
9.2	• Drug dose calculation			.569				
9.3	• Management of drug administration			.793				
9.4	• Drug interactions			.815				
9.5	• Required care of the patient during drug administration			.743				
Factors associated with risk of error								
10	Do you think that the way nurses organise their duties and manage medication has an influence on the likelihood of errors?				.482			

11	Do you think that workload can influence drug dose calculation and medication management?				.891			
12	Do you think that fatigue can influence drug dose calculation and medication management?				.886			
Importance of administering medications as prescribed								
13	How important is it for you to administer the exact dose of the prescribed drug (without rounding off)?					-.620		
14	How important is it for you to check a patient's drug prescription?					-.443		
15	How important is it for you to know how to calculate the dose of a prescribed drug?					.657		
16	To what extent do you think it is important to adhere to the prescribed frequency of the drugs you administer to patients?					-.427		
Verifications prior to drug administration								
17	Do you check the patient's identity before administering a drug?						-.798	
18	Do you check the six rights during drug preparation? <i>Six rights: right individual, right medication, right dose, right time, right route, right documentation.</i>						-.786	
19	How often do you check that the drug is in good condition (expiry date, stability, colour, appearance, etc.) before administering it?						-.410	
Thinking process in relation to medication management								
20	Do you check for side effects related to the drugs you administer to patients?							-.645
21	Do you check the expected effect of the drugs you administer to patients?							-.645
22	Do you explain to the patient/family why a drug is being administered?							-.534
23	Do you explain to the patient/family the expected effects of the administered drug?							-.560
24	When planning and administering medication, do you take into account the other interventions (such as tests) that the patient undergoes?							-.741

Questionnaire 2: Frequency and learning of drug dose calculations

		Dimension 1	Dimension 2
Frequency of drug dose calculation			
1	How often do you calculate the dose of an oral medication?	0.578	
2	How often do you calculate the dose of a parenteral medication (IM, SC, IV)?	0.734	

3	How often do you calculate the dose of IV infusions?	0.811	
4	How often do you calculate the IV flow rate in ml/h?	0.791	
5	How often do you calculate the IV flow rate in drops/min?	0.717	
6	How often do you calculate the IV flow rate in microdrops/min?	0.593	
7	How often do you check drug calculations using a different mathematical method (reasoning, equation, etc.)?	0.460	
8	I feel confident about the drug calculations that I perform	0.432	
9	I ask someone else to check my drug calculations	0.355	
10	My drug calculation skills are assessed while on clinical placement	0.491	
11	I only maintain my drug calculation skills while on clinical placement	0.442	
Learning drug dose calculation			
12	I maintain my drug dose calculation skills by doing practice exercises in my own time		0.404
13	I studied drug calculation during my bachelor studies:		
	<ul style="list-style-type: none"> By attending classes and clinical skills workshops 		0.576
	<ul style="list-style-type: none"> Through self-study with books 		0.714
	<ul style="list-style-type: none"> Through self-study with a computer 		0.755
	<ul style="list-style-type: none"> With another person 		0.587
	<ul style="list-style-type: none"> Another method. Please specify: 		

Table S2. Inter-item correlations of the questionnaires.

[illegible]

[illegible]

inter-item correlations - questionnaire 2

	1	2	3	4	5	6	7	8	9	10	11	12	13,1	13,2	13,3	13,4
1	1,000															
2	,669**	1,000														
3	,574**	,740**	1,000													
4	,459**	,612**	,776**	1,000												
5	,389**	,427**	,461**	,547**	1,000											
6	,359**	,358**	,385**	,397**	,714**	1,000										
7	,360**	,421**	,449**	,440**	,266**	,208**	1,000									
8	,425**	,466**	,496**	,506**	,290**	,248**	,498**	1,000								
9	,316**	,363**	,367**	,319**	,212**	,174**	,397**	,212**	1,000							
10	,456**	,503**	,499**	,507**	,291**	,241**	,435**	,547**	,384**	1,000						
11	,275**	,354**	,381**	,390**	,225**	,179**	,395**	,362**	,334**	,346**	1,000					
12	,337**	,332**	,364**	,321**	,223**	,245**	,432**	,379**	,300**	,417**	0,026	1,000				
13,1	,214**	,267**	,276**	,264**	,113**	,151**	,258**	,484**	,187**	,351**	,246**	,243**	1,000			
13,2	,231**	,217**	,234**	,214**	,154**	,215**	,255**	,316**	,195**	,313**	0,079	,444**	,387**	1,000		
13,3	,267**	,261**	,258**	,233**	,147**	,175**	,258**	,350**	,208**	,277**	,148**	,378**	,421**	,624**	1,000	
13,4	,274**	,356**	,314**	,302**	,129**	,142**	,307**	,324**	,333**	,380**	,197**	,330**	,415**	,417**	,507**	1,000

The inter-item correlation among the same dimension is highlighted in grey.

QUESTIONNAIRE ON THE SELF-PERCEPTION OF THE RELEVANCE OF SAFE DRUG MANAGEMENT (NURSPeM)

Questionnaire 1: Self-perceptions about safe medication management

The next questionnaire will explore your self-perception regarding drug management and administration. It has 24 questions grouped under 7 conceptual domains:

Domain 1: Safety in drug prescription

Domain 2: Familiarity with pharmacological concepts

Domain 3: Relevance for professional practice

Domain 4: Factors associated with risk of error

Domain 5: Importance of administering medication as prescribed

Domain 6: Verifications prior to drug administration

Domain 7: Thinking process in relation to medication management

Mark in the columns the value of the response according to your self-perception about the question asked.

<i>Safety in drug prescription</i>						
		<i>Never</i>	<i>Occasionally</i>	<i>Sometimes</i>	<i>Most of the times</i>	<i>Always</i>
1	How often do you know the most common dose of the drugs you administer to patients?	0	1	2	3	4
2	How often do you know the most common prescription of the drugs you administer to patients?	0	1	2	3	4
3	How often do you know the most common route of the drugs you administer to patients?	0	1	2	3	4
4	In general, do you feel confident about performing drug calculations?	0	1	2	3	4
<i>Familiarity with pharmacological concepts</i>						
5	To what extent are you familiar with the expected effects of the drugs that you administer to patients?	0	1	2	3	4
		<i>Not at all</i>	<i>Somewhat</i>	<i>Quite</i>	<i>Very much</i>	<i>Completely</i>
6	To what extent are you familiar with the specific care or monitoring that a patient requires according to the drug you administer?	0	1	2	3	4
7	To what extent are you familiar with the side effects of the drugs you administer to patients?	0	1	2	3	4
8	To what extent are you familiar with the possible interactions that may exist between the drugs you administer to patients?	0	1	2	3	4
<i>Relevance for professional practice</i>						

9	Rate the following statements according to the importance you believe they have for your professional practice:	Not important at all				Very important
9.1	• Knowledge about drug effects	0	1	2	3	4
9.2	• Drug dose calculation	0	1	2	3	4
9.3	• Management of drug administration	0	1	2	3	4
9.4	• Drug interactions	0	1	2	3	4
9.5	• Required care of the patient during drug administration	0	1	2	3	4
Factors associated with risk of error						
		Not at all	Somewhat	Quite	Very much	Completely
10	Do you think that the way nurses organise their duties and manage medication has an influence on the likelihood of errors?	0	1	2	3	4
11	Do you think that workload can influence drug dose calculation and medication management?	0	1	2	3	4
12	Do you think that fatigue can influence drug dose calculation and medication management?	0	1	2	3	4
Importance of administering medication as prescribed						
13	How important is it for you to administer the exact dose of the prescribed drug (without rounding off)?	0	1	2	3	4
14	How important is it for you to check a patient's drug prescription?	0	1	2	3	4
15	How important is it for you to know how to calculate the dose of a prescribed drug?	0	1	2	3	4
16	To what extent do you think it is important to adhere to the prescribed frequency of the drugs you administer to patients?	0	1	2	3	4
Verifications prior to drug administration						
		Never	Sometimes	Often	Very Often	Always
17	Do you check the patient's identity before administering a drug?	0	1	2	3	4
18	Do you check the six rights during drug preparation? <i>Six rights: right individual, right medication, right dose, right time, right route, right documentation.</i>	0	1	2	3	4
19	How often do you check that the drug is in good condition (expiry date, stability, colour, appearance, etc.) before administering it?	0	1	2	3	4
Thinking process in relation to medication management						
		Never	Sometimes	Often	Very Often	Always
20	Do you check for side effects related to the drugs you administer to patients?	0	1	2	3	4

21	Do you check the expected effect of the drugs you administer to patients?	0	1	2	3	4
22	Do you explain to the patient/family why a drug is being administered?	0	1	2	3	4
23	Do you explain to the patient/family the expected effects of the administered drug?	0	1	2	3	4
24	When planning and administering medication, do you take into account the other interventions (such as tests) that the patient undergoes?	0	1	2	3	4

*This questionnaire has been translated and culturally adapted into English, but the English version has not been validated.

Questionnaire 2: Frequency and learning of drug dose calculation

The following questions refer to calculation medication that you have performed during your placements. Please, answer according to the instructions below:

Frequency of drug dose calculation						
		Never	Less than once /week	1-2 times a week	3-4 times a week	Daily
1	How often do you calculate the dose of an oral medication?	0	1	2	3	4
2	How often do you calculate the dose of a parenteral medication (IM, SC, IV)?	0	1	2	3	4
3	How often do you calculate the dose of IV infusions?	0	1	2	3	4
4	How often do you calculate the IV flow rate in ml/h?	0	1	2	3	4
5	How often do you calculate the IV flow rate in drops/min?	0	1	2	3	4
6	How often do you calculate the IV flow rate in microdrops/min?	0	1	2	3	4
		Never	Sometimes	Often	Very Often	Always
7	How often do you check drug calculations using a different mathematical method (reasoning, equation, etc.)?	0	1	2	3	4
8	I feel confident about the drug calculations that I perform	0	1	2	3	4

9	I ask someone else to check my drug calculations	0	1	2	3	4
10	My drug calculation skills are assessed while on clinical placement	0	1	2	3	4
11	I only maintain my drug calculation skills while on clinical placement	0	1	2	3	4
Learning drug dose calculation						
12	I maintain my drug dose calculation skills by doing practice exercises in my own time	0	1	2	3	4
13	I studied drug calculation during my bachelor studies:	0	1	2	3	4
	• By attending classes and clinical skills workshops	0	1	2	3	4
	• Through self-study with books	0	1	2	3	4
	• Through self-study with a computer	0	1	2	3	4
	• With another person	0	1	2	3	4
	• Another method. Please specify:					

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