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Original

Construction and validation of indicators to evaluate the implementation of the kangaroo method using the Delphi technique

Construção e validação de indicadores para avaliação da implantação do método canguru utilizando técnica Delphi

Construcción y validacíon de indicadores para evaluar la implementación del método canguro utilizando la técnica Delphi

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Abstract

Objective: To present the validation process of a matrix of indicators to evaluate the implementation of the second and third stages of the Kangaroo Method (KM) in two reference maternity hospitals and in primary care in Recife. **Methods:** The construction and validation process followed four stages: (1) elaboration of the logical model of the 2nd and 3rd stage of the KM; (2) composition of the preliminary indicator matrix; (3) selection of experts, sending indicators to this group for analysis using the Delphi Technique; (4) consolidation of results and sending to experts for second consultation and final analysis. A Content Validity Index (CVI) equal to or greater than 80% was adopted to establish agreement. **Results:** The logical model was composed of components for the 2nd and 3rd stages of the KM, with the Education and Care subcomponents, and a component for the interface of the two stages, with the Management subcomponent. Of the 110 items presented, two did not present consensus in the first round and three suggestions for changes were made. Five new indicators were included, totaling 113 indicators at the end. **Conclusion:** The use of the Delhi technique made it possible to expand the consensus and validate the KM indicator matrix from the perspective of experts involved with the strategy.

Descriptors: Kangaroo Method; Evaluation of Research Programs and Instruments; Delphi Technique; Research on Health Services. Validation Study.

Whats is already known on this?
The Kangaroo Method is an effective and well-established public policy, however with insufficient implementation and evaluations focused mainly on maternity hospitals and referring to the 2nd stage.

What this study adds?
The explanation of the logical model of the Kangaroo Method expressed the path to achieve the results and the Delphi technique made it possible to establish consensus among experts on indicators recommended for evaluation.

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Resumo

Objetivo: *Apresentar o processo de validação de uma matriz de indicadores para avaliação da implantação da segunda e terceira etapas do Método Canguru (MC) em duas maternidades de referência e na atenção básica em Recife.* ***Métodos:*** *O processo de construção e validação seguiu quatro passos: (1) elaboração do modelo lógico da segunda e terceira etapas do MC; (2) composição da matriz de indicadores preliminar; (3) seleção de especialistas, envio de indicadores a esse grupo para análise utilizando a Técnica Delphi; (4) consolidação dos resultados e envio aos especialistas para segunda consulta e análise final. Adotou-se um Índice de Validade de Conteúdo (IVC) igual ou superior a 80% para estabelecer a concordância.* ***Resultados:*** *O modelo lógico foi composto de componentes para segunda e terceira etapas do MC, com os subcomponentes Educação e Assistencial, e um componente para a interface das duas etapas, com o subcomponente Gestão. Dos 110 itens apresentados, dois não apresentaram consenso na primeira rodada e três sugestões de alteração foram feitas. Cinco novos indicadores foram incluídos, totalizando ao final 113 indicadores.* ***Conclusão:*** *O uso da técnica Delphi possibilitou ampliar o consenso e validar a matriz de indicadores do MC na perspectiva de especialistas envolvidos com a estratégia.*

Descritores: *Método Canguru; Avaliação de Programas e Instrumentos de Pesquisa; Técnica Delfos; Pesquisa sobre Serviços de Saúde; Estudo de Validação.*

Resumén

Objetivo: *presentar el proceso de validación de una matriz de indicadores para evaluar la implementación de la segunda y tercera etapa del Método Madre Canguro (MC) en dos maternidades de referencia y atención primaria en Recife.* ***Métodos:*** *el proceso de construcción y validación siguió cuatro pasos: (1) elaboración del modelo lógico de la 2ª y 3ª etapa del MC; (2) composición de la matriz de indicadores preliminar; (3) selección de especialistas, enviando indicadores a este grupo para su análisis mediante la Técnica Delphi; (4) consolidación de resultados y envío a especialistas para una segunda consulta y análisis final. Para establecer la concordancia se adoptó un Índice de Validez de Contenido (IVC) igual o superior al 80%.* ***Resultados:*** *el modelo lógico estuvo compuesto por componentes para la 2ª y 3ª etapa del MC, con los subcomponentes de Educación y Asistencia, y un componente para la interfaz de las dos etapas, con el subcomponente de Gestión. De los 110 ítems presentados, dos no alcanzaron consenso en la primera ronda y se hicieron tres sugerencias de cambios. Se incluyeron cinco nuevos indicadores, totalizando al final 113 indicadores.* ***Conclusión:*** *El uso de la técnica Delhi permitió ampliar el consenso y validar la matriz de indicadores de MC desde la perspectiva de los expertos involucrados con la estrategia.*

Descriptores*: Método Canguro; Evaluación de Programas e Instrumentos de Investigación; Técnica Delphi; Investigación sobre Servicios de Salud. Estudio de Validación.*

INTRODUCTION

In Brazil, the Kangaroo Method (KM) is a health policy composed of integrated actions aimed at qualifying the care of newborns (NB) and their families. It is characterized by early skin-to-skin contact, by keeping the NB, only in diapers, upright next to the parents' chest, keeping the minimum time necessary to stabilize the newborn and the maximum that both understand to be pleasurable and sufficient.[1-3]

It is carried out in three stages, the first in the Neonatal Intensive Care Unit (NICU) and the Conventional Neonatal Intermediate Care Unit (CoNICU), the second in the Kangaroo Neonatal Intermediate Care Unit (KaNICU) and the third after hospital discharge. In this, the monitoring takes place with the partnership of the maternity hospital of origin and the Basic Health Unit (BHU), and aims to monitor the child's first weeks at home until it reaches 2,500g.[1,3-4]

The KM requires a long-term work plan, involving the training of multiprofessional teams, sensitization of hospital managers, monitoring of practices and continuous support to the teams, integration with the BHUs, as well as mechanisms that enable the effective participation of families.[3-4]

One of the challenges of the method is the effective implementation of an adequate model of comprehensive care for the monitoring of newborns discharged from neonatal units. There is a need to qualify the country's teams so that they feel safe when welcoming and accompanying these children, using the KM, in a shared way between primary care and the multiprofessional team of the baby's birth maternity.[3,5]

Insufficient knowledge about the level of implementation of KM in the Health System contributes to its non-fulfillment. For the improvement of the KM, considering its normative and legal basis, it is required to identify the potentialities and weaknesses resulting from partial implementations and their repercussions on the effects achieved. Therefore, monitoring and evaluation are instruments that favor choices of essential and effective actions and strategies for the full implementation of interventions by pointing out obstacles that restrict the possibility of obtaining better results.[6] To this end, the judgment involved in the evaluations requires valid indicators, criteria and standards that are explicit and accepted by the interested parties, regardless of whether they are managers, workers or users.[7] However, the definition of these indicators and criteria to issue a value judgment is not always trivial.

In some situations, for the production of evaluation criteria or indicators, consensus techniques are used, in particular, when there is no unanimity of opinion due to the lack of historical data, the need for an

interdisciplinary approach and prospects for structural changes in the sector.[7-10] These techniques, in addition, are useful to unveil an ethical, social or cultural aspect, or even make political or technical-scientific decisions in an area of knowledge that enables the validation of the reliability of the information, through subjective analysis, coming from professionals or specialists.[10]

This article sought to present the validation process of a matrix of indicators to evaluate the implementation of the second and third stages of the KM in two reference maternity hospitals and in primary care in the city of Recife.

METHODS

The construction and validation of the indicators followed the following stages: (1) elaboration of the logical model of the 2nd and 3rd stage of the KM; (2) composition of the preliminary indicator matrix from the logical model; (3) selection of experts in all regions of Brazil, sending indicators to this group for analysis using the Delphi Technique; (4) consolidation of the results of the previous stage and sending them to the experts for second consultation and final analysis.

Initially, a logical model of the 2nd and 3rd stage of the KM was elaborated based on consultations with institutional documents and technical standards that deal with the Kangaroo Method and Attention to low birth weight newborns. They were: Ordinance GM/MS number 1683 of July 12, 2007, which approves the Guidance Standards for the Implementation of the Kangaroo Method; Ordinance SAS/MS number 930/2012 - Defines the guidelines and objectives for the organization of comprehensive and humanized care to the severe or potentially severe newborn and the criteria for classification and qualification of Neonatal Unit beds within the scope of the Unified Health System (SUS); and the manuals of the Kangaroo Method - Shared monitoring between Hospital Care and Primary Care (2015), Guidelines for the Kangaroo Method in Primary Care: Shared Care (2016), Humanized care for newborns: Kangaroo Method: technical manual (2017), Manual for the third stage of the Kangaroo Method in Primary Care (2018) and Kangaroo Method: care guidelines (2019). State and municipal plans and laws were not included, as they establish local strategies for implementing policies.

The construction of the Logical Model used the Donabedian triad with indicators representative of the dimensions of structure, process and result. The structure describes the physical resources, equipment and/or materials related to the care provided, including human resources; the process, the activities developed by all actors involved in the care; and the result refers to the effects obtained in health care.[11]

In the second stage, for each component of the logical model, indicators were established to compose a preliminary matrix grouped into the structure, process and result dimensions. This contained 110 indicators, distributed in the three components of the KM: 2nd stage (44 indicators); Integration 2nd stage (KANICU) + 3rd stage (Egress Outpatient Clinic + Primary Care-PC) (15 indicators) and 3rd stage (51 indicators).

The third stage was the first round of the Delphi Method, a consensus technique chosen where experts, also called specialists, authority, panelists or judges, answered a semi-structured questionnaire, through rounds and anonymously among the group.[10] The modified Delphi technique was chosen, and the first round consisted of the direct judgment of the items of the evaluation instrument.[12] The use of this strategy aimed at a shorter time in the application of the questionnaire, ensuring that experts started from a common base and lent themselves more easily to statistical analysis and interpretation. To minimize bias, due to a probable limitation of the topics discussed and direct influence on the answers, a literature search and insertion of spaces for open comments were used.

For the selection of specialists, the intentional sampling technique was used, based on a network of key informants, and the heterogeneity of the participants was ensured. The diversity of professional experiences, managers, providers of different forms of care and students from the different regions of Brazil was prioritized. The inclusion criterion for the selection of specialists was the expertise in the KM (which uses a multidisciplinary team), with professional and student guests from different backgrounds in the health area and states of the country that worked in public management, PHC and hospital care. The sample size took into account the findings in the literature regarding the number of participants required to perform the technique[7,12-14] and the abstention rates.[7,9,10,14] Invitations to contribute to the consensus technique were sent by electronic contact and a period of seven days was granted for response.

For the specialists who accepted the invitation, their anonymity was guaranteed and a guide with technical instructions to participate in the consensus technique and the procedures that would be adopted were sent by e-mail, in an individual message. The guide, prepared by the authors, contained the objective

of the research, the logical model that supported the preliminary construction of the matrix of indicators, in addition to the criteria for judgment related to the relevance and intensity of the importance of the indicators in the context of the KM. The message included the legal basis and the documents that guided the elaboration of the logical model of the KM and the matrix of indicators. At this stage, a response period of 30 days was requested.

To evaluate the indicators for their relevance, the classification of each item included the following categories "essential", "necessary" or "unnecessary" and for the intensity of importance in the context of the KM, a Likert-type scale of agreement was used, containing five points: (1: not important; 2: little important; 3: medium importance; 4: important; 5: very important). It was also possible to modify the indicators or add the observations they deemed pertinent.

Consensus was adopted by obtaining 80% of answers in the sense of agreement, being 100% considered as perfect consensus.[15] To arrive at the agreement value, the Content Validity Index (CVI) was calculated: the responses "4" and "5" on the Likert scale of each judge were added to each item of the questionnaire and this sum was divided by the total number of responses. The final value was multiplied by 100 to obtain the percentage value. CVI results lower than the established consensus level suggested reviewing the item.[16]

For the fourth stage, a new Matrix was sent with the addition of suggested items and requested the evaluation of the changes made and reassessment of the items in which no consensus was reached. The results of the statistics obtained in the first cycle were also presented to monitor the results constructed, as well as to allow each participant to review his argumentation before each item.[17] For this stage, a response was requested within fifteen days. The consultation with the experts took place from December 2020 to March 2021 and with two rounds a consensus was reached.

This article followed the recommendations of resolution 466/12 of the National Health Council and was submitted to the IMIP Research Ethics Committee under CAAE number 35017420.7.3002.5201.

RESULTS

The logical model was composed of components focused on the 2nd and 3rd stages of the KM, with the Education and Care subcomponents, and a component focused on the interface of the two stages, with the Management subcomponent. For each component, items of structure, process and result were listed. Through the logical model, the choice of indicators and the share of contribution in the expected results were guided (Box 1).

Box 1. Logical model of the 2nd and 3rd stages of the Kangaroo Method. Recife, Pernambuco, Brazil, 2021.

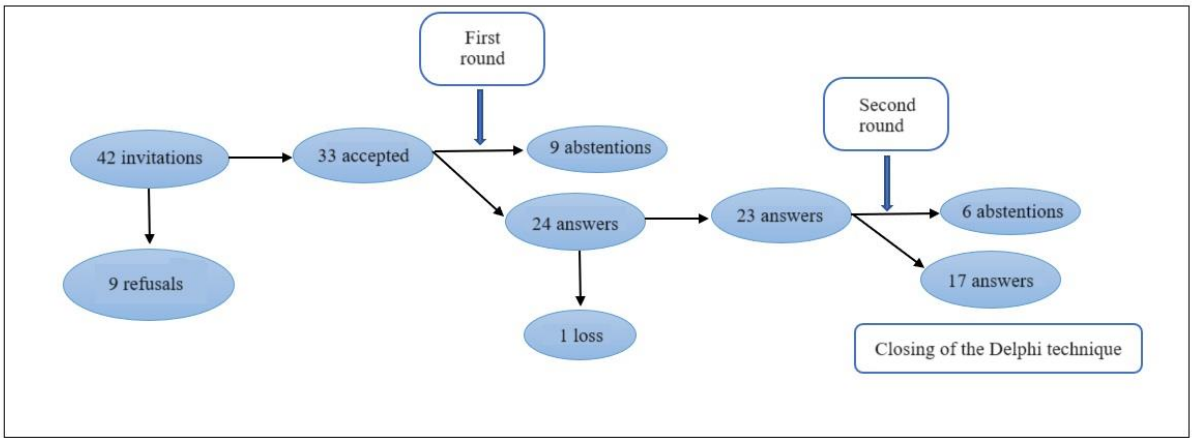
Component	Sub-Component	Structure	Processes (Activities)	Intermediate result	Impact
2nd stage of KM (KANICU)	Education	Human Resources: Physician; Nurse; Physical therapist; Psychologist; Speech-therapist; Social Worker, Nursing Technician Physical Resources: Space for meetings, courses or educational activities. Nursery with 5m² for the bed/crib set; Ambience room; Sink for hand washing Material Resources: Mother bed; Simple incubator; Acrylic crib; Manual resuscitator; Electronic scale; Resuscitation material; Wall clock and calendar; Stethoscope; Thermometer; Portable vacuum cleaner; Removable armchair; Transport incubator; Otoscope; Sphignomanometer; Ophthalmoscope; Nebulizer and mask set; Alcohol gel dispenser	Guidance to parents/caregivers: BF and complementation Y/N; Performing the Kangaroo position for as long as possible; Recognition of warning signs; Post-discharge monitoring	Greater adherence to the care recommended by the KM	Greater adherence to KM Reduction of morbidity and mortality during the 2nd and 3rd stage
	Assistance		Physical examination and evaluation of the G/D considering the corrected GI	Greater adherence to breastfeeding Strengthening the bond between mother and baby Promotion of adequate monitoring of the G/D Support network present	
			Examinations (laboratory, transfontanellar USG, ear test, fundoscopy)		
			Monitoring of prescribed medications		
			Use of strategies for pain and stress management		
			Assistance to the mother in breastfeeding and milk extraction, NB hygiene, diaper change, bathing and positioning the child		
			Encouragement to visit family members and the social support network		
			Encouraging the participation of the father or other reference figure of the mother-infant dyad.		
			- Discharge summary		
Integration 2nd stage of KM (KANICU) + KM Stage 3 (Egress outpatient clinic + AB)	Management	Human Resources: Manager Physical Resources: Room Material Resources: Computer, internet access, printer, paper, pen	Training of health professionals	Professionals trained for adequate, comprehensive and interdisciplinary care. Adherence to the third stage of the method Increase in recruitment NBs hospitalized in Kangaroo at BHU	
			Communication of KANICU with MHD, SHD, HD or BHU depending on the local reality		
			Reference and counter reference between maternity and BHU		
			Existence of a clinical responsible for the monitoring		
			Existence of shared clinical objectives, examinations and treatments		
			Opportunity of monitoring consultation in the 3rd stage		
			Regulation of newborn recruitment by AB, care by FHSC and specialized		

KM Stage 3rd (outpatient clinic + AB)	Education	Human Resources: Physician; Nurse; Physical therapist; Speech Therapist; Psychologist; Social Worker, Nursing Technician; Community Health Agent (CHA) Physical Resources: Space for meetings, courses or educational activities. Office lighted and ventilated; Waiting room; Sink for hand washing; Material Resources: Baby weight scale; Anthropometric ruler; Stethoscope; Otoscope; Thermometer; Tongue depressor; Table with chairs for attendance; Examination table; Alcohol-gel dispenser	Guidance for parents/caregivers: KM and complementation S/N; G/D; Performing the Kangaroo position at home; Vaccination; Use of medications; Recognition of warning signs	Greater adherence to the care recommended by the MC	
	Assistance		Physical examination and evaluation of the G/D taking into account the corrected GI	Greater adherence to breastfeeding Promotion of a suitable G/D Complete and updated vaccination schedule	
			Referrals to specialized service		
			Monitoring of prescribed medications		
			Identification of situations of biological and socio/environmental risks		
			Return Scheduling		
			Vaccination and monitoring of the child's vaccination status		
			Filling in the child's booklet		
			Open agenda for emergency situations		
			Evaluation of the support network and support for its maintenance		
			First consultation with a physician or nurse in the neonatal unit of origin		
			Shared consultation of FHSC and FHS		
			Home visit in the 1st week after discharge from KANICU		
			Observation of situations of vulnerability especially during the home visit		
			Weekly consultation until discharge of the 3rd stage of the KM		

Source: Elaborated by the authors, 2021.

The panelist group was composed of nurses (58.33%), pediatricians/neonatologists (33.33%), physical therapist (4.16%) and nutritionist (4.16%). Other professionals such as speech therapist, psychologist and occupational therapist were invited, but did not respond to the invitation. Most experts were female (91.66%) and had been trained in KM for at least five years (91.66%). Figure 1 shows the flowchart of the execution of the Delphi technique.

Figure1. Flowchart of participants and rounds of the Delphi Technique. Recife, Pernambuco, Brazil, 2021.



Source: Elaborated by the authors, 2021.

Forty-two (42) experts were invited; nine refused to participate or did not respond to the invitation. At the end of the deadline, as not everyone responded, explanations were sent about the importance of participation and an additional period of fifteen days was granted. At the end of this, other participants responded. Of the initial group of 33 experts, 24 responded (72.7%). One of the questionnaires was not completely completed and was discarded, totaling 23 instruments answered. In the fourth stage, a second working instrument was sent 10 days after the end of the second deadline to the responding experts. An additional deadline was adopted for receiving responses. Of the 23 instruments sent, 17 were returned with the answers (73.9%).

Of the 110 items presented to the experts, two did not present consensus in the first round and three had suggestions for changes to make them more understandable. They recommended the inclusion of five new indicators. Box 2 shows the indicators and the respective levels of consensus (LC) after the first round.

The items related to the physical structure: existence of a place for the secretariat, and existence of an adult scale, both components of the 3rd stage of the KM, did not reach consensus and were reassessed in the second round. In addition, the panelists suggested including the indicators Existence of nutritional assistance and Existence of psychological assistance/Occupational therapy in the Structure and Proportion of prescribed analgesics dimension and prescription of non-pharmacological measures in the Process dimension of the 2nd stage of the KM. As for the component Integration 2nd stage of the KM (KANICU) + 3rd stage of the KM (Egress Outpatient Clinic + AB), it was suggested to include the Proportion of the team that took the KM course in the Process dimension. It was suggested to include the Proportion of filled booklets: delivery room data; growth and development data (G/D) in the 3rd stage component of the KM.

The judges requested that in the indicator Existence of communication between KANICU and the Municipal Health Department (MHD), State Health Department (SHD), Health District (HD) or Basic Health Unit (BHU), belonging to the dimension Process of the 2nd stage of the KM (KANICU) + 3rd stage of the KM (Egress Outpatient Clinic + AB), the acronyms were not used exclusively to facilitate understanding, since it was originally described as such. It was requested that the Existence of standards exposed be changed to Existence of standards relating to KM exposed and that the materials in the indicator Existence of material for individual use be detailed.

A new matrix containing the items that did not show consensus and the suggested changes was forwarded to the second round. In this, the minimum of 80% consensus was reached in all new indicators and there remained no consensus on the items existence of a place for the secretariat and existence of an adult scale with a suggestion for its removal. The consensus technique was closed and the final version of the matrix had 113 indicators. Table 3 shows the indicators presented in the second round and their CVI values.

Box 2. Matrix of Content Validity Index (CVI) indicators and values after the first round of the Delphi Technique. Recife, Pernambuco, Brazil, 2021.

Component: 2nd stage of the Kangaroo Method				
Dimension	**Sub-Component**	**Criteria**	**Indicator**	**CVI**
Structure		Human Resources: Professionals according to the standard	Existence of a physician technician in charge	95.66%
			Ratio of daily physicians per bed	91.33%
			Ratio of existing physicians per shift per bed	82.60%
			Existence of nurse coordinator	100.00%
			Ratio of existing nurses per shift per bed	100.00%
			Ratio of existing physical therapists per shift per bed	81.81%
			Existence of a speech therapist	91.3%
			Ratio of nursing technicians per shift per bed	100.00%
		Physical Resources: Environment according to standard	Existence of nursing ward	100.00%
			Existence of ambience room	86.36%
			Existence of sink for hand washing	100.00%
		Material Resources: Material that the unit must have	Proportion of beds for mother	100.00%
			Proportion of incubators per total beds	82.60%
			Proportion of acrylic cribs per total beds	100.00%
			Ratio of manual resuscitators per NB	95.65%
			Existence of electronic scale	100.00%
			Ratio of materials to bed resuscitation	95.65%
			Ratio of stethoscopes per bed	86.96%
			Ratio of thermometers per bed	95.66%
			Ratio of handheld vacuums per bed	91.3%
			Existence of clock and wall calendar	82.60%
			Ratio of removable armchairs per bed	91.3%
			Existence of alcohol gel dispenser	95.65%
			Materials shared with CONICU: - Existence of transport incubator - Ratio of otoscopes per bed - Ratio of Sphygmomanometer per bed - ratio of ophthalmoscope per bed - ratio of nebulizer and mask set per bed	90.90%
Process	Education Guidance to parents and caregivers on:	Breastfeeding	Proportion of professionals who guide and encourage parents and caregivers to keep the child breastfed.	100.00%
		Artificial breastfeeding	Proportion of professionals who advise parents and caregivers on artificial breastfeeding	81.81%
		Performing the kangaroo position	Proportion of professionals who advise parents and caregivers on performing the kangaroo position for as long as possible	100.00%

		Recognition of warning signs	Proportion of professionals who guide parents and caregivers on the recognition of warning signs	100.00%
		Monitoring after discharge	Proportion of professionals who guide parents and caregivers regarding monitoring after discharge	100.00%
	Assistance	Physical examination	Proportion of professionals who perform the physical examination	95.65%
		Evaluation of G/D considering the corrected GI	Proportion of professionals who evaluate the G/D considering the corrected GI	95.45%
		Examinations (laboratory, transfontanellar USG, ear test, fundoscopy)	Proportion of professionals requesting complementary exams	95.45%
		Medications	Proportion of professionals monitoring prescribed medications	95.45%
		Pain and stress management	Proportion of professionals using strategies to manage pain and stress during procedures	95.65%
		Assistance to the mother in breastfeeding and milk extraction, NB hygiene, diaper change, bathing and positioning the child	Proportion of professionals who assist the mother in breastfeeding and milk extraction; Proportion of professionals who assist the mother in NB hygiene, diaper change, bathing and child positioning	95.45%
		Encouragement to visit family members and the social support network	Proportion of professionals who encourage the visit of family members and the social support network	91.31%
		Encouraging the participation of the father or other reference figure	Proportion of professionals who encourage the participation of the father or other reference figure of the mother-infant dyad	86.36%
		- Discharge summary	Proportion of professionals who fill out the discharge summary	95.65%
Result	Education	Greater adherence to the care recommended by the MC	Proportion of guardians who adhered to the care recommended by the KM	95.65%
	Assistance	Greater adherence to breastfeeding	Proportion of children who are breastfeeding	95.65%
		Strengthening the bond between mother and baby	Proportion of mothers who have a strong bond with their babies	95.65%
		Promotion of adequate monitoring of the G/D	Proportion of children with G/D monitoring	95.65%
		Support network present	Proportion of children with a support network present	91.3%
Component: Integration 2nd stage of the Kangaroo Method + 3rd stage of the Kangaroo Method				
Structure		Human resources: Manager	Existence of responsible manager	95.65%
		Physical resources:	Existence of room	90.90%
		Material resources: Pen, computer, internet access, printer, paper	Existence of materials such as computer, internet access, printer, paper and pen	82.61%
Process	Management	Training of health professionals	Existence of training or qualification courses regarding the KM for health team professionals	100.00%
		Communication of KANICU with MHD, SHD, HD or BHU depending on the local reality	Existence of KANICU communication with MHD, SHD, HD or BHU depending on the local reality	95.65%

		Reference and counter-reference between maternity and BHU	Existence of reference and counter-reference between maternity and BHU	95.65%
		Clinical monitoring manager	Existence of a clinical responsible for the monitoring	95.65%
		Shared clinical goals, exams, and treatments	Existence of shared clinical objectives, examinations and treatments No duplication of exams, consultations, medications	95.45%
		Opportunity of monitoring consultation in the 3rd stage	Existence of opportunity consultation opportunity in the 3rd stage	95.65%
		Regulation of newborn recruitment by AB, care by FHSC and specialized	Existence of regulation of newborn recruitment by AB, care by FHSC and specialized	95.45%
Result	Management	Professionals trained for adequate, comprehensive and interdisciplinary care.	Proportion of trained professionals for adequate, comprehensive and interdisciplinary care	100.00%
		Adherence to the third stage of the method	Proportion of newborns informed to the BHU about the discharge of the 2nd stage of the KM Proportion of newborns returning for outpatient care after discharge from the 2nd stage of the KM	95.65%
		Increase in the recruitment of newborns hospitalized in KM at BHU	Proportion of NBs hospitalized in Kangaroo recruited by AB	95.45%
Component: Kangaroo Method Stage 3				
Structure		Human Resources: Professionals in the outpatient segment and at the FHU according to the standard	Existence of a physician	100.00%
			Existence of nurse	100.00%
			Existence of nursing technician	95.65%
			Existence of CHA	95.65%
		Physical resources: Adequate environment for the outpatient clinic and FHU	Existence of rooms according to the standard	91.3%
			Existence of a place for the secretariat	63.63%
			Existence of waiting room	81.81%
			Existence of sink for hand washing	100.00%
		Material Resources Material suitable for use by graduates and FHU professionals	Ratio of alcohol preparation dispensers per room	90.90%
			Existence of standardized medical records, with discharge summaries	86.95%
			Existence of exposed standards	81.81%
			Existence of table for service with chairs	95.45%
			Existence of table for physical examination	95.65%
			Existence of baby weight scale	100.00%
			Existence of anthropometric ruler	100.00%
			Existence of adult type scale	47.61%
			Existence of plastic tape measure	100.00%
			Existence of digital thermometer	86.95%
			Existence of tongue depressor	82.61%
			Existence of ophthalmoscope	82.61%

			Existence of stethoscope	100.00%
			Existence of otoscope	86.95%
			Existence of material for individual use	94.73%
Process	Education Guidance to parents and caregivers on:	Breastfeeding	Proportion of professionals who guide and encourage parents and caregivers to keep the child breastfed.	95.65%
		Artificial feeding when necessary.	Proportion of professionals who advise parents and caregivers on artificial breastfeeding	82.61%
		Kangaroo position at home	Proportion of professionals who advise parents and caregivers to maintain a kangaroo position at home until the NB reaches 2500g.	95.65%
		Vaccination	Proportion of professionals who advise parents and caregivers on the vaccination schedule.	95.65%
		Administration of medications.	Proportion of professionals who guide parents and caregivers regarding the administration of medications.	95.65%
		Recognition of warning signs	Proportion of professionals who guide parents and caregivers on the recognition of warning signs	95.65%
	Assistance	Physical examination (weighing)	Proportion of professionals who weigh the child during physical examination	100.00%
		Physical examination (length measurement)	Proportion of professionals who measure the child's length during physical examination	100.00%
		Physical examination (head circumference measurement)	Proportion of professionals measuring head circumference during physical examination	100.00%
		Evaluation of G/D taking into account the corrected GI	Proportion of professionals who evaluate the G/D considering the corrected GI	100.00%
		Referrals to specialized service	Proportion of professionals who refer NB to specialized care S/N	95.45%
		Medications	Proportion of professionals who monitor prescribed medications	95.65%
		Identification of situations of biological risks	Proportion of professionals who assess biological risks	95.65%
		Identification of situations of socio/environmental risks	Proportion of professionals who assess social/environmental risks	100.00%
		Return Scheduling	Proportion of professionals who make return scheduling	100.00%
		Vaccination	Proportion of professionals who refer for vaccination and monitor the child's vaccination status	100.00%
		Filling in the child's booklet	Proportion of professionals who fill out the child's booklet.	95.65%
		Open agenda for emergency situations	Existence of an open agenda for emergency situations	95.65%
		Evaluation of the support network and support for its maintenance	Proportion of professionals who evaluate the support network and provide support in favor of its maintenance	86.95%
		First consultation with a physician or nurse in the neonatal unit of origin	Performance of the first outpatient visit by the physician or nurse of the neonatal unit of origin in the first week after hospital discharge	95.65%
		Shared consultation of FHSC and FHS	Performance of shared consultation between FHSC and FHS	95.65%

		Home visit in the 1st week after discharge from KANICU	Performance of FHS home visit in the first week after hospital discharge	86.95%
		Weekly consultation until discharge of the 3rd stage of the KM	Performance of weekly consultation until the child reaches the weight of 2500g	95.65%
		Observation of situations of vulnerability, especially during the home visit	Proportion of professionals who observe situations of vulnerability, especially during home visits	100.00%
Result	Education	Greater adherence to the care recommended by the KM	Proportion of guardians who adhered to the care recommended by the KM	95.65%
	Assistance	Greater adherence to breastfeeding	Proportion of children who are breastfeeding	100.00%
		Promotion of a suitable G/D	Proportion of children with adequate G/D monitoring	95.65%
		Complete and updated vaccination schedule	Proportion of children with complete and updated vaccination schedule	95.65%

Source: Elaborated by the authors. 2021.

Box 3. Matrix of indicators and values of Content Validity Index (IVC) after the second round of the Delphi Technique. Recife, Pernambuco, Brazil, 2021.

Component: 2nd stage of the Kangaroo Method				
Dimension	**Sub-Component**	**Criteria**	**Indicator**	**CVI**
Structure		Human Resources: Professionals according to the standard	Existence of nutritional assistance	80.00%
			Existence of psychological assistance/ TO	80.00%
Process	Assistance	Pain and stress management	Proportion of analgesics prescribed and prescription of non-pharmacological anti-pain measures	85.71%
Component: 2nd stage of the Kangaroo Method + 3rd stage of the Kangaroo Method				
Process	Management	Training of health professionals	Proportion of the team that took the KM Course	80.00%
		Communication of KANICU with MHD, SHD, HD or BHU depending on the local reality	Existence of communication between KANICU and the Municipal Health Department, State Health Department, Health District or Basic Health Unit depending on the local reality	95.65%
Component: Kangaroo Method Stage 3				
		Physical resources: Adequate environment for the outpatient clinic and FHU	Existence of a place for the secretariat	63.63%
		Material Resources Material suitable for use by graduates and FHS professionals	Existence of rules regarding the KM exposed	81.81%
			Existence of adult type scale	47.61%
			Existence of material for individual use (personal protective equipment, pens...)	94.73%
Process	Assistance	Filling in the child's booklet	Proportion of booklets filled: delivery room data; G/D data	80.00%

Source: Elaborated by the authors, 2021.

DISCUSSION

The logical model allowed the explanation of the intervention and the way to achieve the expected results, guiding the choice of indicators. The relationship of the indicators with the logical model, in addition to favoring the internal validity of the study, contributed to the construction of the preliminary indicator matrix.

There are few evaluative studies in relation to the implementation of the KM, and, in common, these studies point to deficiencies in the implementation.[17-21] It is noteworthy the difficulty of implementing the 3rd stage of the KM with a focus on sharing care by hospital and basic care, where this care is usually carried out primarily by hospital care with lack of knowledge of families and professionals about the role of primary care in the KM.[21-23]

Different research designs may be used for this assessment. The research subjects may be professionals,[20] managers[17] or users of health services,[22] individually or jointly.[18,21,23] On-site observations may also be made.[17-18] The approach can be qualitative, using semi-structured scripts;[18,20,23] or normative evaluations in the light of the Donabedian triad.[17,19,21,22] In common, all studies require assessment instruments in accordance with the standards recommended by the Ministry of Health.

In this sense, logical models are useful tools to represent a theory underlying a research question in order to make it verifiable, by explaining through a visual scheme the way in which it will be implemented, and what are the expected results.[24] In this study, it allowed disentangling the 2nd and 3rd stages of the KM and its path until obtaining the desired results, directing the selection of indicators to the most appropriate ones.

The use of the Delphi method contributed to the critical examination and validation of the preliminarily prepared indicators and helped with the proposition of new indicators. The experts critically analyzed the indicators, in order to evaluate their ability to measure the dimensions contained in each of the components, improving the final matrix, fulfilling the objective of using the technique.[7-10,12-13,15]

Some advantages of performing the Delphi method in the present study are described in the literature. Among them, the preservation of the anonymity of the panelists minimized the influence of academic or professional status, favoring active and less biased participation; the low operational cost; the standardization of procedures, the inclusion of all respondents and the feedback of the responses allowed the subjects to redefine their judgments, from the collective view of the group.[8,9,12-14] In addition to these, it enabled the participation of professionals from different geographical regions of the country with their diversity of experiences in teaching and implementing the KM.

The main disadvantage was that participants abstained (27.3% in the first round and 26.1% in the second) even after confirming their intention to participate. Abstention rates were similar to those reported in the literature, 30% to 50% in the first cycle and between 20% and 30% in the second.[7,9,10,14] Another difficulty was the non-compliance with the established deadlines, requiring its extension with implications in the period of execution of the Delphi technique, associated with the need to stimulate the conclusion of the evaluations.

Seventeen professionals participated in the two rounds. Studies report that sample sizes vary depending on the topic investigated, complexity of the problem, selected approach, available resources and variety of knowledge required for validation.[8-10,12,14] In general, 15 to 30 experts are sufficient to employ the method.[7,12-14]

For data analysis, the percentage valuation of items that achieved higher scores seemed appropriate, given the lack of data from other studies that would allow a comparative analysis of measures of central tendency and dispersion on the same object. To this end, the CVI calculation was performed. The quantitative responses were supported by the qualitative assessment and the comments made by the judges.[13,25]

Two rounds were needed to reach consensus and close the Delphi Method. Studies report that the number of rounds can vary depending on the criteria defined by the authors, and the modified technique tends to have fewer rounds than the classical technique. The authors also report that commonly two or three rounds are required for consensus.[10]

Finally, as a limitation of the study, the fact that the indicators were validated by the consensus technique does not guarantee that the ideal answer has been found. These indicators are not necessarily the best available, but it is important to emphasize that they reflect a certain level of technical knowledge about the second and third stages of the KM presented by the consulted experts, in a collective and participatory production, based on professional competence and recognized parameters.[8,10] Also, the

heterogeneity of the experts consulted from different regions and formations intended to take a multifaceted look at the KM, seeking to expand the consensus and reliability of this intervention. However, the different ways of acting of the specialists, whether in management, assistance and/or teaching, although addressing the KM, can lead to partial perceptions about the method for not developing their activities at all levels of performance and understanding them in the diversity of their attributions, which sometimes go beyond the intervention. In addition, it may increase the time for completion of the technique.

As for the contributions of the study, the Logical Model validated by the Delphi Method plays the role of expressing the path to evaluate the implementation of the second and third stages of the KM, an important step in an evaluative study, making it possible to contribute to health planning.

CONCLUSION

The existence of reliable assessment instruments is important for the development of effective interventions to improve the implementation of the Kangaroo Method in maternity wards and primary health care. The use of the Delhi technique made it possible to expand the consensus and validate the KM indicator matrix from the perspective of experts involved in the second and third stages of the strategy.

Nevertheless, the instrument presented must be adapted to local needs and realities with the inclusion or exclusion of indicators, depending on the local regional context. In addition, as innovations and improvements occur in the health system, the revision of the logical model is necessary, aiming at its adequacy to contemplate new aspects or others not foreseen with repercussions on the matrix of indicators for the evaluation of the KM.

CONTRIBUITIONS

Contributed to the conception or design of the study/research: Cândido JLA, Frias PG, Sarinho SW. Contributed to data collection: Cândido JLA. Contributed to the analysis and/or interpretation of data: Cândido JLA. Contributed to article writing or critical review: Cândido JLA, Frias PG, Sarinho SW. Final approval of the version to be published: Frias PG, Sarinho SW.

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