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INFLUENCE OF A BOOKLET ABOUT NEONATES' SAFETY ON FAMILY MEMBERS' BEHAVIOR AND KNOWLEDGE

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ABSTRACT

Objective: to analyze the influence of the booklet entitled "How can you contribute to the safety of a newborn in the hospital?", in relation to the companions' knowledge and behavior regarding the safety actions for neonates.
Method: a quasi-experimental before-and-after study was developed with 60 companions of newborns in the neonatal intermediate care unit of a public hospital between December 2022 and February 2023. Collection was through two groups, Control and Experimental, with use of the booklet and in three phases: Pre- and post-test and intervention. To compare the pre- and post-test scores, the *Kolmogorov-Smirnov and McNemar* tests were used and the significance level adopted was α=0.05.
Results: the Experimental group had a higher percentage of correct answers in the post-test after using the booklet, showing increased knowledge and positive behavior in safety actions. However, only the "check the bracelet" and "confirm its data before care" items showed statistical significance.
Conclusion: the booklet proved to be an important tool in the education and health process, which may be favorable for the neonate's safety.

DESCRIPTORS: Patient safety. Neonatology. Patient participation. Education in health. Nursing.

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INFLUÊNCIA DE CARTILHA SOBRE SEGURANÇA DO NEONATO NO COMPORTAMENTO E CONHECIMENTOS DE FAMILIARES

RESUMO

Objetivo: analisar a influência da cartilha "Como você pode contribuir para a segurança do bebê no hospital?", em relação ao conhecimento e comportamento dos acompanhantes quanto às ações de segurança do neonato.
Método: estudo quase experimental, do tipo antes e depois, foi desenvolvido com 60 acompanhantes de neonatos na unidade de cuidados intermediários neonatal de um hospital público, entre dezembro de 2022 e fevereiro de 2023. A coleta ocorreu por meio de dois grupos, controle e experimental, com o uso da cartilha e ocorreu em três fases: pré e pós-teste e intervenção. Para comparar os escores de pré e pós-teste foi utilizado o *Teste de Kolmogorov-Smirnov e McNemar* e o nível de significância adotado foi de α=0,05.
Resultados: o grupo experimental apresentou um percentual maior de acertos no pós-teste após utilização da cartilha, evidenciando aumento do conhecimento e comportamento positivo nas ações de segurança. Entretanto, apenas os itens de conferência da pulseira e confirmação de seus dados antes do cuidado apresentaram significância estatística.
Conclusão: a cartilha demonstrou ser uma ferramenta importante no processo de educação e saúde, o que pode ser favorável para a segurança do neonato.

DESCRITORES: Segurança do paciente. Neonatologia. Participação do paciente. Educação em saúde. Enfermagem.

INFLUENCIA DE UN FOLLETO SOBRE SEGURIDAD NEONATAL SOBRE EL COMPORTAMIENTO Y LOS CONOCIMENTOS DE LOS FAMILIARES

RESUMEN

Objetivo: analizar la influencia del folleto "¿Cómo puede contribuir para la seguridad de un bebé en el hospital?", en relación con el conocimiento y el comportamiento de los acompañantes en términos de acciones de seguridad neonatal.
Método: estudio cuasiexperimental del tipo antes y después, desarrollado con 60 acompañantes de neonatos en la unidad de cuidados neonatales intermedios de un hospital público, entre diciembre de 2022 y febrero de 2023. Los datos se recolectaron por medio de dos grupos, Control y Experimental, utilizando el folleto y a lo largo de tres fases: Antes de la prueba, Después de la prueba e Intervención. Para comparar las puntuaciones antes y después de la prueba se utilizaron las pruebas de *Kolmogorov-Smirnov* y de *McNemar* y se adoptó α=0,05 como nivel de significancia.
Resultados: el Grupo Experimental presentó un porcentaje de respuestas correctas más elevado en la fase posterior a la prueba, después de utilizar el folleto, lo que evidencia una mejora en el conocimiento y comportamiento positivo en las acciones de seguridad. Sin embargo, solamente los ítems "revisar la pulsera" y "confirmar sus dados antes de la atención" presentaron significancia estadística.
Conclusión: el folleto demostró ser una herramienta importante en el proceso de educación y salud, lo que puede ser favorable para la seguridad de los neonatos.

DESCRIPTORES: Seguridad del paciente. Neonatología. Participación del paciente. Educación en salud. Enfermería.

INTRODUCTION

Patient Safety (PS) is understood as the reduction of risks of harms in health care, making errors less likely through strategies that seek to improve care[1–2]. Healthcare-related harms to patients are a major challenge for public health, in addition to being considered the leading causes of death in the world[1]. In view of the current scenario, the theme of PS has achieved global prominence and important emphasis in the hospital context[3], which has generated national public health programs and policies. An example of the aforementioned is the implementation of the National Patient Safety Program of the Ministry of Health (*Ministério da Saúde*, MS), and approval of Collegiate Board Resolution (*Resolução da Diretoria Colegiada*, RDC No. 36) of the National Health Surveillance Agency (*Agência Nacional de Vigilância Sanitária*, ANVISA), which aimed at and established specific goals and actions to promote PS and quality in health services in all scopes and complexities[4–5].

The search for PS in neonatal intensive care units (NICUs) and neonatal intermediate care units (NMCUs) becomes extremely important due to the high complexity and severity of patients that are subjected to multiple procedures and prolonged hospitalization times[6]. In such environments, the search for a safe environment and its guarantee are a priority, as neonates are considered a vulnerable population group, and also because work process errors and ineffective communication increase the potential for adverse events (AEs)[5,7].

A Brazilian study showed that 53.70% of the most frequent AEs in an NICU were related to central venous access; 14.33% to peripherally inserted central catheters; 14.33% to intubation; 7.41% to bladder catheter-related AEs and, among others, to skin lesions[8]. An international study, which used a safety surveillance tool called “Global Assessment of Pediatric Patient Safety”, identified that 414 AEs were detected among the 3,790 pediatric hospitalization records analyzed, with 210 AEs being totally preventable[9].

In the last decade, participation of the patient (or of the companion) in their own care has been discussed, seeking to provide them with knowledge about the clinical condition, establish effective communication with the health team, participate in the decisions of their therapeutic plan and contribute to reducing AEs[10]. In this perspective, the World Health Organization (WHO) created the *“Patients for Patient Safety”* campaign in 2013, with the objective of stimulating the engagement of patients and caregivers in the promotion of safe care and in the involvement of care decisions[11–12].

Researchers have shown that, in neonatal units, including the family in the care routine contributes several benefits to neonates by promoting an environment of trust and easing interaction with the health team[8]. Some studies show that, when allied to the health team, patients and companions act as important barriers in the prevention of AEs, assuming active and collaborative roles in care, thus reducing the chances of errors during the assistance provided[13]. An international study carried out in an Australian hospital identified that, after training and including patients and family members in care, there was a 15% reduction in medication errors from the alert of patients and family members about possible errors[7]. Thus, the study suggests that using tools to support health knowledge might influence the family members’ behavior and knowledge on patient safety[7,12].

Therefore, it becomes necessary to develop new tools to increase neonates’ safety in the hospital environment and encourage family participation in the care process. Thus, the importance of educating and involving parents in patient safety is considered, taking into account that they spend much of their time with their children. A scoping review identified and suggested different strategies established to encourage the engagement of patients and families in PS, such as conversation circles, playful interventions, interviews, booklets, technological resources, multimedia and different didactic resources[12,14]. Therefore, a digital booklet called “How can you contribute to the safety of a newborn

in the hospital?" was developed and validated by this group of researchers. This booklet stands out as an educational technology of easy application and access to companions, simple to understanding and offering greater financial viability[15].

Using educational technologies aimed at health education about PS becomes an important resource that, in addition to providing diverse information, seeks to sensitize people to a change in behavior and encourages health professionals' adherence to safety actions[14,16]. In this study, the definition of behavior is considered as a set of specific attitudes, a way of proceeding in the face of a situation, taking into account its social environment; In turn, knowledge can be defined as a phenomenon based on the representations that individuals make of the world. It is a set of information and principles understood and constructed through reason or experience[17–18].

Although some studies highlight the importance of technologies that favor the participation of companions in patient safety, there is a gap in the literature on the implementation and evaluation of strategies that seek this objective[19–20]. In view of a booklet already validated by the same group of researchers, the study objective is to analyze the influence of the booklet called "How can you contribute to the safety of a newborn in the hospital?", about the companions' knowledge and behavior regarding safety actions for the newborn.

METHOD

This is a quasi-experimental pilot study of the before-and-after type which, throughout an educational intervention, used the booklet called: "How can you contribute to the safety of a newborn in the hospital?". The study involved an intervention applied to an Experimental Group and to a Control Group, without resorting to randomization in the allocation of participants to the groups.

In a previous study, the booklet was constructed and validated with an overall CVI above 90%[15]. Thus, the booklet met the objective of acting as an instrument to provide information and participation of companions in the safety actions for neonates hospitalized in an NICU. In addition, it was based on PS goals such as: Patient Identification; Hand Hygiene; Safe Surgery; Prevention of Falls and Pressure Injuries; and Safety in Drug Prescription, Use and Administration. The booklet was developed in conjunction with different professionals and used exclusive illustrations created to offer playfulness and proximity to the reader[15].

Data collection was carried out in the Neonatal Intermediate Care Units (NMCUs) of the Neonatology sector at a philanthropic maternity hospital, in the Municipality of Belo Horizontal, Minas Gerais. The institution has 57 beds in the Conventional Neonatal Intermediate Care Unit (CNMCU) and 15 beds in the Kangaroo Neonatal Intermediate Care Unit (KNMCU). The hospital has humanization strategies centered on care integrality, with the differential of joint hospitalization in the NMCU, having the presence of a companion during the neonate's entire period hospitalization, thus justifying the collection *locus* for this study.

The participants were the companions of neonates hospitalized in Intermediate Care units, selected by convenience and based on the following inclusion criteria: aged at least 18 years old; and no hearing and/or visual impairment. The exclusion criteria corresponded to companions that did not complete their participation in all stages of the research. Sample calculation was made considering a pilot study with 30 companions included in the Control Group and another 30 in the Intervention Group. Data collection took place between December 2022 and February 2023.

It was divided into three stages: Pre-intervention; Educational intervention; and Post-intervention. The first stage (Pre-intervention) initially sought newborns' and companions' sociodemographic aspects such as age, gender, kinship, schooling and profession; as well as variables related to previous experiences with hospitalization and PS. Subsequently, an instrument with 17 items was

used to evaluate self-reported behavior on PS, such as the practice of checking patient identification or infection prevention, and promotion of safe communication. The possible answers to the questions were “Always”, “Sometimes”, “Never” and “I don’t know”, and evaluated behavioral change in the face of PS. Questions such as “Do I ask the professionals to explain about the medications, the times and possible side effects?”, “Do I feel comfortable asking questions and clarifying doubts with the professionals?” and “Do I ask about possible complications and postoperative care or procedures”? Were asked.

In addition to these items, the instrument consisted of five objective questions that evaluated knowledge about PS, which had two answer options: “Correct” and “Incorrect” and addressed issues related to the six international PS goals.

The interventions were applied by three trained researchers during the day shifts only to parents and companions, as described below.

Phase I: Parents and companions were invited to voluntarily participate in the research, a stage in which the study proposal and relevance were also revealed. After signing the Free and Informed Consent Form (FICF), the instrument referring to the pre-test was applied. Phase II: After applying the instrument, the intervention was carried out with application of the booklet, carrying out a dialogued and individualized exposure for parents and companions in the hospitalization units themselves, with a mean duration of 15 minutes. The material was made available free of charge, digitally and through the *QR code* created and made available, easing the companions’ access, understanding and interest. Only participants from the Experimental Group participated in the intervention phase with the booklet. Phase III: Referred to as “post-test”, it took place between the second and fifth day after applying the booklet.

The Control Group participated in phases I and III of the study. The time interval between the intervention and the post-test was chosen based on similar studies which indicated that it was an adequate and sufficient period for the participants to be able to absorb the content presented and put into practice all the information obtained with the educational technology[12,14]. During the third phase, the same instrument from the pre-test was reapplied after the intervention to the Control Group and to the Experimental Group.

Due to the high patient turnover in the institution, six companions were lost during data collection.

It is noted that the study met the ethical aspects established by Resolution No. 466/2012 of the National Health Council, with due approval by the Research Ethics Committee. For this, the participants signed the FICF before initiating the research stages.

IBM’s “*Statistical Package for the Social Sciences* (SPSS) software, version 22.0, was used for database construction and data analysis. The launch was in charge of two independent researchers and then checked for possible discrepancies.

The association between the nominal variables of the control and intervention groups was performed using *Fisher*’s exact test. Normality of the quantitative variables was determined using the *Kolmogorov-Smirnov* test and the comparison was carried out using the independent T-Test. The *McNemar* test was employed to analyze data on nominal variables and associations between ordinal variables before and after. The data were tested using the marginal homogeneity test, adopting a significance level of $p<0.05$.

RESULTS

Of the 60 companions included in the study, 95% (n=57) were mothers, 5% were fathers (n=3), with a mean age of 26.5 years old, mostly with >9 years of study, between Elementary and High School. Although 53.3% (n=28) of the participants had previous experience as companions in a hospital environment, 81.6% (n=49) had never received any guidance on PS in the last two years.

Table 1 shows the comparisons between the pre- and post-test moments about the companions' self-reported behavior relation to PS practices. There is a considerable change in behavior regarding the PS actions related to the different groups. When evaluating the findings, there is a significant difference in relation to the change of attitude regarding the questions: "Do I ask the professionals to check the bracelet before care?"; "Do I remind the professional about the existence of any allergies?" and "Do I remind the professionals to confirm data before medication?", in the Experimental Group.

Table 1 – The participants' behaviors at the pre- and post-test moments. Belo Horizontal, MG, 2023 (n=60).

	Experimental Group					Control Group				
	Pre		Post		p-value	Pre		Post		p-value
	N	%	N	%		N	%	N	%	
Do I check the data on the child's ID bracelet?										
Always	16	53.3	24	80		17	56.6	18	60	
Sometimes	10	33.3	5	16.6	NA*	6	20	9	30	NA*
Never	3	10	1	3.3		7	23.3	3	10	
I don't know	0	0	0	0		1	3.30	0	0	
Do I ask the professionals to check the bracelet before care?										
Always	1	3.30	6	20		5	16.60	4	13.30	
Sometimes	9	30	17	56.60	0.002	9	30	13	43.30	NA*
Never	19	63.30	6	20		15	50	13	43.30	
I don't know	1	3.30	6	20		1	3.30	0	0	
Do I remind the professional about the existence of any allergies?										
Always	13	43.3	19	63.3		12	40	16	53.3	
Sometimes	2	6.6	4	13.3	0.020	4	13.3	3	10	NA*
Never	13	43.3	5	16.6		9	30	5	16.6	
I don't know	0	0	1	3.3		5	16.6	6	20	
Do I remind the professionals about unused medications?										
Always	16	53.30	22	73.30		15	50	11	36.60	
Sometimes	6	20	5	16.60	NA*	3	10	6	20	0.350
Never	7	23.3	3	10		9	30	9	30	
I don't know	1	3.3	0	0		3	10	4	13.3	
Do I remind the professionals to check data before the medication?										
Always	6	20	14	46.6		11	36.6	1	3.3	
Sometimes	11	36.6	12	40	0.006	7	23.3	9	30	0.99
Never	13	43.3	4	13.3		11	36.6	10	33.3	
I don't know	0	0	0	0		1	3.3	1	3.3	
Do I feel free to ask the professionals to sanitize their hands?										
Always	6	20	18	60		8	26.6	7	23.3	
Sometimes	11	36.6	6	20	NA*	7	23.3	12	40	NA*
Never	12	40	6	20		14	46.6	11	36.6	
I don't know	1	3.3	0	0		1	3.3	0	0	

*NA: Not Applicable. Marginal Homogeneity Test. Statistical significance: p<0.05.

Table 2 presents the percentage of correct answers to the questions about the participants' knowledge in the pre- and post-tests. Data analysis did not show statistically significant differences in relation to the intragroup findings on knowledge about PS. The data also reveal that the companions from the control and intervention group mostly gave correct answers to the questions in the first and second assessments. The Experimental Group showed a significant increase in correct answers after contact with the booklet, in relation to the theme of injury prevention (p<0.039).

Although not significant, it was possible to observe higher proportions of adequate answers after the educational intervention in the Experimental Group in different themes.

Table 2 – Percentage of correct answers to the questions regarding knowledge about Patient Safety in the groups at the pre- and post-test moments. Belo Horizontal, MG, 2023. (n=60).

	Experimental Group					Control Group				
	Pre		Post		p-value	Pre		Post		p-value
	N	%	N	%		N	%	N	%	
Which is the purpose of the bracelet?										
Correct	21	70	25	83.3	0.289	23	76.60	24	86.6	0.99
Incorrect	9	30	5	16.6		7	23.30	6	13.3	
How can the companion contribute to the prevention of HCAIs*?										
Correct	26	86.6	28	93.3	0.50	28	93.30	25	83.3	0.37
Incorrect	4	13.3	2	6.6		2	6.60	5	16.6	
When can I remind health professionals to wash their hands?										
Correct	21	70	20	66.6	0.55	14	46.60	11	36.6	0.999
Incorrect	9	30	10	33.3		16	53.30	19	63.3	
Do I ask about the risks of wounds or injuries to the patient's skin?										
Incorrect	12	40	5	16.6		3	30	3	30	

*HCAIs: Healthcare-Associated Infections, *McNemar* test. Statistical significance: p <0.05.

DISCUSSION

The booklet proved to have influenced the parents' knowledge and behavior about PS. The Experimental Group had a higher percentage of correct answers in the post-test after using the booklet, showing increased knowledge and more positive behaviors in safety actions. However, only the "check the bracelet" and "confirm data before care" were statistically significant.

In this study, the companions mostly stated that they had never received guidelines on PS; however, when analyzing the results, it was noticed that they had previous knowledge about the topic, although not in its entirety. This finding can be justified by the participants' previous experience. The results corroborate a study carried out in a pediatric unit, which showed that the companions had superficial knowledge about PS acquired through previous experiences, but had difficulty identifying risk situations and understanding PS concepts[12].

This study revealed that 15% of the participants had less than nine years of study, showing low schooling levels, which may influence understanding of the guidelines received and their health literacy. Health literacy should be considered for care and PS planning, contributing to decision-making and care safety[21]. It becomes necessary to assess each person's knowledge and skills to understand and use all the information they receive in their everyday lives. Therefore, other authors argue that communication failure between patients and health professionals and lack of understanding of what

is received become risk factors for the occurrence of AEs[9]. In addition, a number of studies reinforce the need to develop and validate easy-to-understand educational materials to engage patients and families in safety and care, as well as the process of evaluating their effect on the practice[22].

Some Brazilian studies addressed the main strategies found in the literature that act as facilitating tools for patient engagement in PS. The teaching tools used ranged from technological instruments with audiovisual resources to traditional teaching tools such as booklets and pamphlets. It is believed that the combination of teaching tools can act in complementary ways and show greater effectiveness in the knowledge and participation of companions and patients alike[12,23].

Although the results did not present statistically significant differences in relation to the Experimental Group in some topics, it was possible to observe an increase in adherence to PS actions. These results show the influence of the booklet entitled "How can you contribute to the safety of a newborn in the hospital?" in encouraging behavioral changes in relation to PS, as the companions started to check whether identification bracelet was present, questioned the delay and need for medications, and encouraged visits to perform hand hygiene before touching the neonate. In line with this finding, a national research study conducted in Pediatrics concluded that the influence of another booklet as a low-cost educational technology provided diverse information on PS and contributed for patients and companions to build critical thinking in relation to their own health condition and involvement in PS[16].

When comparing the behavior of the participants from the Control Group, without access to the educational material, no significant difference was observed in relation to the different moments. This finding is reinforced by studies which stated that, during hospital routines, the provision of information by the health team during hospitalization is unsatisfactory and automated. The absence of good quality information and content related to PS were pointed out as challenges to be overcome for the engagement of the family in care and PS. Some studies show that work overload contributes to automation to provide information to patients and companions[12,14].

It is noted that, in the post-test, the Experimental Group presented an increase in the adherence percentage regarding the PS actions, in relation to the moment before the intervention. The themes involving communication with the health team were the ones that showed statistically relevant differences ($p<0.05$). After contact with the booklet, the participants began to interact more with the team, feeling comfortable to ask the professionals about the care practices. The Brazilian study that used a game as an educational technology for parental engagement in PS elucidated that the participants were more involved in care and felt motivated to actively take part in decision-making, as co-participants of care[12,14].

The practice of patient and companion involvement in PS has been much discussed in recent years. Patient involvement can occur at different moments, from the change in perception to situations of risk to the patient, to involvement in the monitoring of safety actions during the care provided by health professionals[23]. Educational interventions have the potential to empower the participants, who start feeling safer to actively participate in decision-making[24].

When oriented, companions cease to be passive recipients of information and become active participants in care. This process of empowering them in care is considered a strategy to reduce direct incidents to the patients, so that they become able to interact and contribute to obtaining best practices in care[14].

In this sense, several campaigns have been developed to encourage and ease patient involvement in their own care. An international campaign, developed in 2013 and entitled "*Ask me to explain*", was created to encourage patients and families to discuss any doubts regarding the care they may have, in addition to promoting effective communication between patients and the health team. The campaign developed materials such as *buttons* and pamphlets used by professionals,

which said: “Ask me anything you want”, encouraging the patient or companion to be comfortable to ask and answer questions[25].

Good communication between health professionals and caregivers in NICUs and NMCUs becomes essential to establish a relationship of trust and freedom. In this sense, a Colombian study showed that effective communication increases learning and allows greater understanding of the hospitalization process[26]. In addition, managers are important to provide an adequate work environment to involve patients and caregivers in safety, through effective communication and partnership, directly influencing the prevention of harms and the patients’ involvement in their own health status[26]. An international study verified that the provision of information was associated with the patients’ involvement in PS. Access to information and educational materials assists in the perception of risk situations and increases the intention to act upon errors and detecting them[27].

It is known that companions do not feel comfortable asking health professionals about hand hygiene, as evidenced in this study. Some studies establish strategies to improve the practice, such as encouraging the professionals to guide and give permission to the patients to question them, thus easing companions and patients to adhere to the practice[28]. Thus, it is suggested that patients and companions be guided and encouraged by health professionals to question care practices such as hand hygiene and correct medication use

The booklet developed is a strategy to encourage family members’ actions and engagement in PS and care, and can also be used as a guide with recommendations for the professionals. Despite progress in the answers, some research results may show limitations of the instrument. Using digital booklets as educational technologies enhances participatory, dialogued and respectful care, in addition to collaborating with the companions’ knowledge and adherence framework. However, the need for a guided application of the booklet should be considered, and preparation is necessary and should not only be delivered, allowing dialog and interaction with the team[15–16].

Digital Information and Communication Technologies (DICTs) are a set of technological and digital resources that assist in knowledge construction, allowing health professionals to exchange information and act on evidence, using technologies. DICT use in the health education context eases the process in the hospital environment, streamlines communication and advances information[29–30]. Using the booklet by virtual means enabled greater coverage in the health promotion process, which in theory can be accessed at any time by the companion. On the other hand, some network access limitations were found, although data from the Brazilian Institute of Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística*, IBGE) show that 90% of the population has access to the Internet and that 95% have access to the Internet and mobile phones[30].

Thus, the need to use educational technologies as facilitators of the educational process is reiterated. The instrument should be planned according to the need for learning and interest of those involved. For health education, choices of active learning methodologies that encourage the companions’ participation and involvement are necessary. Therefore, it becomes necessary to conduct education programs in PS for hospitalized patients and strategies to maintain motivation to participate in PS activities in an improved way.

The participants’ access to mobile Internet is pointed out as a study limitation, which represented hindrance to accessing the digital material.

CONCLUSION

The findings evidenced the booklet as an educational instrument related to PS. The importance of its use linked to the multiprofessional team’s performance was recognized, with regard to the actions to promote the safety of newborns and to prevent incidents in the unit.

Thus, incorporating the booklet to the units can be considered a proposal for change in the construction of health education, acting in the active role of companions and encouraging dialog with the professionals. Despite the highlighted results, the participants showed greater adherence to PS after contact with the booklet. The companions began to observe and intervene in the care provided, interacting with the NMCU health team. Given the above, the importance of developing and applying educational technologies is emphasized, taking into account the interest and needs of the population. The use of digital technologies should be considered for arousing the participants' interest and easing day-to-day access.

It is expected that the study will make it possible to expand discussions on the companions' participation in the prevention of adverse events and in the incorporation of active tools that encourage engagement in PS, along with health team professionals.

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