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RESEARCH

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NURSING CARE IN THE GUTHRIE TEST

*Assistência de enfermagem no teste do pezinho**Cuidados de enfermería en la prueba de guthrie***Fernanda Gomes Carvalho**¹ **Alessandra Bernadete Trovó de Marqui**² 

ABSTRACT

Objective: to describe nursing care in the performance of the guthrie test in newborns. **Method:** exploratory, descriptive study of qualitative nature, with the Basic Health Units of the city of Uberaba-Minas Gerais as the setting. Twenty-two nurses participated in the study. Data was collected using a semi-structured questionnaire and the data was analyzed using descriptive statistics and thematic analysis. **Results:** there was a predominance of the female gender, 45 to 49 years of age and specialization in public health. The analysis of the answers about nursing care allowed the agglutination the data into five categories: 1) Graduation and Training, 2) Information to Parents, 3) Challenges and Obstacles, 4) Impacts of the Pandemic and 5) Perception and Perspectives of the Nursing Team. **Conclusion:** the study shows that nurses provide adequate assistance in the guthrie test. The data shows the relevance of the nurses' qualification in the maternal and child health area.

DESCRIPTORS: Enfermagem; Triagem neonatal; Pediatria; Neonatologia; Recém-nascido.

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RESUMO

Objetivo: descrever a assistência de enfermagem na realização do Teste do Pezinho em recém-nascidos. **Método:** estudo exploratório, descritivo de natureza qualitativa, tendo como cenário as Unidades Básicas de Saúde do município de Uberaba-Minas Gerais. Participaram do estudo 22 enfermeiros. A coleta de dados foi realizada por meio de um questionário semiestruturado e os dados analisados por estatística descritiva e análise temática. **Resultados:** houve predomínio de gênero feminino, faixa etária entre 45 a 49 anos e especialização em saúde pública. A análise das respostas sobre a assistência de enfermagem permitiu aglutinar os dados em cinco categorias: 1) Graduação e Capacitação, 2) Informação aos Pais, 3) Desafios e Obstáculos, 4) Impactos da Pandemia e 5) Percepção e Perspectivas da Equipe de Enfermagem. **Conclusão:** o estudo evidencia que os enfermeiros prestam assistência adequada no Teste do Pezinho. Os dados demonstram a relevância da qualificação do enfermeiro na área de saúde materno infantil.

DESCRITORES: Enfermagem; Triagem neonatal; Pediatria; Neonatologia; Recém-nascido.

RESUMEN

Objetivos: describir la asistencia de enfermería en la realización de la Prueba del Niño en recién nacidos. **Método:** estudio exploratorio, descriptivo de naturaleza cualitativa, teniendo como cenário as Unidades Básicas de Saúde do município de Uberaba- Minas Gerais. Veintidós enfermeros participaron en el estudio. La recogida de datos se realizó mediante un cuestionario semiestruturado y los datos se analizaron mediante estadística descriptiva y análisis temático. **Resultados:** hubo predominio del sexo femenino, franja etaria entre 45 y 49 años y especialización en salud pública. El análisis de las respuestas sobre la asistencia de enfermería permitió aglutinar los datos en cinco categorías: 1) Graduación y Formación, 2) Información a los Padres, 3) Desafíos y Obstáculos, 4) Impactos de la Pandemia y 5) Percepción y Perspectivas del Equipo de Enfermería. **Conclusión:** el estudio demuestra que las enfermeras prestan asistencia adecuada en el Test de Guthrie. Los datos demuestran la relevancia de la cualificación del enfermero en el área de la salud materno-infantil.

DESCRIPTORES: Enfermería; Tamizaje neonatal; Pediatría; Neonatología; Recién nacido.

INTRODUCTION

The heel prick test (PT), included in the National Neonatal Screening Program (PNTN), aims to detect, at an early stage, diseases that are usually asymptomatic at birth and have the potential to cause irreversible damage to the neonate, such as intellectual disability. Thus, in addition to the laboratory examination through the analysis of blood samples collected from the baby's heel, confirmation, treatment and follow-up of patients affected by any of the screened diseases are performed.¹

Nursing plays a fundamental role in achieving success in neonatal screening because this professional has direct interaction with the pregnant woman, newborn and puerperal woman, being able to act from the orientation still in prenatal care, in the maternity hospital until the procedure itself.² In this sense, it is up to the nurse to commit to the assistance provided, providing the necessary knowledge and clarifying the doubts pertinent to the examination.³

A recent integrative review of the literature aimed to investigate the role of nurses in performing the PT and concludes that this professional has important skills to be performed, however, he must improve his skills, his scientific knowledge on the subject and also intensify and expand the information provided to parents about this exam since prenatal care.⁴ Another systematic review concludes that it is essential that from graduation to their training, students are taught about the relevance and role of Nursing in carrying out this procedure, so that in the future when acting as a nurse they can provide more humanized care and consequently contribute to the reduction of recollection rates, always valuing the well-being of the child.⁵

Previous research on PT has been conducted by our group, focusing on the perception of pregnant women in prenatal care⁶, knowledge of puerperal women⁷, health professionals⁸ and nursing students⁹ about this exam and even if there were maternal and fetal conditions that could interfere with the result.¹⁰ However, it is necessary to understand the nursing performance in assisting this exam, which encouraged us to develop this study, aiming to fill a gap little explored in the scientific literature.

In view of the above, this study aimed to describe nursing care in performing PT in newborns.

METHOD

This is an exploratory, descriptive study of a qualitative nature, having as its setting the Basic Health Units (BHUs) of the municipality of Uberaba/MG, located in the Triângulo Mineiro and with 340,277 inhabitants.¹¹ According to data from the municipal government there are 25 health units in the urban area, six in the rural area and two health centers (Center for Integral Care to Women's Health/CAISM and Dr. Eurico Vilela Health Center).

Twenty-two nurses working in different health districts in the urban area of the municipality participated in the study. The inclusion criteria were: nursing professionals with higher education linked to the BHUs of the municipality of Uberaba/MG, who had at least one year of experience in the PT area, who agreed to voluntarily answer the questionnaire by signing the Free and Informed Consent Form and who were professionally active at the time of data collection. The exclusion criteria were: technical and mid-level nursing professionals

from BHUs in the municipality of Uberaba/MG, nurses working for less than one year in PT, nurses who refused to participate in the study and who were on vacation or away for another reason (medical leave, maternity leave, ...) at the time of data collection.

Data collection took place, in person, from March to July 2022, using a semi-structured questionnaire. This instrument consisted of open-ended discursive questions, aiming at the characterization of the participants and the analysis of nursing care in PT.

Descriptive statistics and thematic analysis were used to analyze the data, according to Bardin¹².

To illustrate the categories, excerpts from the open answers of the questionnaire were used with the acronym ENF for nurse and numbered sequentially, according to its application. The purpose of this coding is to ensure the anonymity of the participants.

The present study was approved by the Research Ethics Committee (CEP) of UFTM, Uberaba/MG, under CAAE: 53431121.7.0000.5154 and opinion no. 5.142.600.

RESULTS

Twenty-two nurses participated in the study and there was a predominance of females (77.3%, n= 17) with emphasis on the age group between 45 and 49 years (22.7%, n= 5) followed by 25 to 29 years and 35 to 39 years with the same frequency each (18.2%, n= 4). Regarding marital status, about 54.5% (n= 12) and 31.8% (n= 7) were married and single, respectively. Regarding the number of children, approximately 32% (n= 7) have only one and 45.5% (n= 10) have no offspring.

Monthly family income of seven to eight minimum wages was reported by 31.8% (n= 7) of the participants and 22.7% (n= 5) with income of five to six wages. Regarding the year of academic training, there was a predominance from 2014 to 2018 (31.8%, n= 7), followed by 2004 to 2008 (27.3%, n= 6). Specialization in public health was highlighted (68.2%, n= 15) and approximately 59.1% (n= 13) of them have one to five years of experience in PT. The participating nurses came from the Family Health Units/FHUs 63.5% (n=14), Matrix Health Units/MSUs 13.5% (n=3) and five of them (CAISM; BHUs; Integrated Health Care Center/CAIS; Family Health Strategy/FHS and Eurico Vilela Health Center) with only 4.6% in each (n=1).

The analysis of the nurses' responses regarding nursing care allowed the data to be grouped into five categories: 1) Graduation and Training, 2) Information to Parents, 3) Challenges and Obstacles, 4) Impacts of the Pandemic and 5) Perception and Perspectives of the Nursing Team.

1) Graduation and Capacity Building

In the present study, most of the nurses surveyed (86.4%, n=19) reported having had contact with the subject during their undergraduate studies, in theoretical and practical classes. The excerpts below illustrate this category:

Yes, class and practice during the internship in a basic health unit. (ENF1)

Yes. During my undergraduate studies I had theoretical classes and I collected at the unit. (ENF14)

It is noteworthy that only three of the 22 nurses responded that they had not had contact with the topic and therefore did not answer the next question about their evaluation during graduation.

The self-assessment for preparation during graduation ranged from good (score 3.0) to excellent (score 5.0) (good: 22.7%, n=5; very good: 13.6%, n= 3 and excellent: 18.2%, n= 4).

Participants were asked if they had taken any preparatory courses in this area and there was a predominance of courses offered by the municipal government, as well as learning in practice with professionals already working in the sector. The NUPAD (Center for Actions and Research in Diagnostic Support) was also mentioned.

Yes, internal training in the city hall with specific training by NUPAD. (ENF2)

No, I learned from the most experienced professionals. (ENF5)

No. However, the health department has already provided three trainings since I have been working at the city hall. (ENF17)

The 22 nurses were also asked about their preparedness with a graded scale from 0 to 5, ranging from very poor to excellent. Sixteen of them (73%) rated themselves with very good (n=13) and excellent (n=3) preparedness, with grades 4 and 5, respectively.

2) Information for Parents

Regarding the preparation during the disclosure to parents and/or guardians about possible changes in PT, there was a predominance of scores 4 and 5, with 0 meaning little prepared and 5 very prepared. These results are illustrated in the excerpts below:

I feel prepared to answer any questions and reveal the problem, but it is always tense because we do not know the reaction. (ENF5)

Due to the experience of working for 7 years in PHC. (ENF9)

Some participants reported low frequency of nursing performance in this process, as shown below:

These changes are not part of our routine, usually the results are brought directly by the pediatrician. (ENF11)

Nursing is not responsible for revealing a diagnosis, only for performing the recall. (ENF22)

Nurses' opinions on the effectiveness of the instruction parents receive after discharge from the maternity hospital in relation to PT were investigated. Diverse results were observed:

I believe that this instruction should be done since prenatal care because in the maternity ward there is a lot of information and many cannot understand the importance of the test, especially the correct collection period. (ENF5)

No. We are only told that we need to go, not why or the importance. (ENF15)

I think we need to intensify the dissemination of information, including in prenatal consultations. (ENF18)

Despite the previous results, about 91% of the nurses responded that they provide guidance on this test during prenatal care.

Yes. In all consultations with pregnant women from the 32nd week onwards, I reinforce the guidelines in every consultation. (ENF13)

Yes, and we have the support of the gynecologist and pediatrician. (ENF20)

3) Challenges and Obstacles

Nurses were asked about the challenges and obstacles they face in the face of PT. The timeframe for the test, the reception, blood collection, knowledge and documentation were mentioned.

One of the biggest challenges is when mothers bring their NBs to perform the heel prick test after the 10th day of birth, and the correct one is from the 3rd to the 5th day. And most report that they did not have time or availability." (ENF3).

I believe it is more related to family adherence for timely collection. (ENF4)

Time to perform an adequate consultation with the mother-child binomial. (ENF5)

Attention to parents (ENF8)

One thing I notice is the lancets, they could be improved, some fail or do not pierce enough to form a satisfactory blood sample. (ENF1)

Take the blood sample with as little puncture as possible. (ENF20)

Explain about the diseases screened with the test. (ENF4)

Parents' misinformation, really about the importance. (ENF1)

Lack of information, wrong period, prenatal care done wrong. (ENF7)

Bureaucratic part of the system. (ENF9)

Number of documents to be completed. (ENF11)

Nurses were asked if they had suggestions for possible changes to be made in the BHU in which they work, citing mainly the need to adapt the physical structure and secondarily the training of nursing technicians and welcoming family members.

A better and more prepared environment to perform the test. (ENF7)

I suggest having a better physical structure and always available to perform the test. (ENF21)

Training of nursing technicians that is being carried out. (ENF12)

Improve the reception of parents and NB. (ENF22)

4) Impacts of the Pandemic

Regarding the impact of the COVID-19 pandemic on the demand for and performance of PT in the health unit, it was unanimous among the participants that there was a decrease due to fear of contamination, but also new guidelines for the test to be collected still in the maternity hospital, before hospital discharge. The excerpts below illustrate this category:

During the worst periods of the pandemic, demand was low, parents were afraid to go out with their babies. (ENF1)

Yes, demand decreased due to fear of contamination. (ENF14)

During the pandemic period it was done in the maternity ward, but there was a lot of problem due to the collection before 24 hours. At the moment, we are returning to collections at the BHU. (ENF5)

There was a decrease since the test was being performed in maternity hospitals. (ENF18)

Yes, there was a decrease, as all were being collected before hospital discharge. (ENF22)

Still on the pandemic, all participants stated that there was no reduction or lack of the necessary inputs to perform PT.

5) Perceptions and Perspectives of Nursing Staff

Participants listed the presence of gaps regarding the dissemination and awareness of the population about the importance of the examination and screened conditions and cited the urgent need for campaigns on this topic, as evidenced below:

I believe in the need for more campaigns raising awareness about the importance of testing and diseases detected. (ENF14)

There have been improvements in covering more detected diseases, but the campaigns still leave something to be desired." (ENF21)

Regarding their future perspectives in the PT, nurses mainly cited the incorporation of new diseases and guidelines:

I expect greater preparation, technical and scientific training. (ENF1).

Increased collections with better guidance for families during prenatal care. Increase in the number of diseases screened. (ENF4)

DISCUSSION

The present study aimed to analyze nursing care in the PT. To our knowledge, this is an unprecedented research in view of two theoretical studies on this theme, one of them of the integrative review type with the objective of reviewing in the literature the national and international scientific productions that investigated the role of nurses in performing the PT and the other, a systematic review of nursing performance in the face of the collection of this exam.^{4,5}

In the present study, there was a predominance of females, corroborating data from previous studies carried out with nursing students, future professionals in the area, which identified frequencies of 82%¹³ and 85%⁹ of women. Although the performance of the nursing class has been gaining a lot of space in the market by the male gender, the historical context of this profession is still noticeable.

Regarding age, the profile of nurses is relatively young, ranging from 25 to 49 years old, mostly married and without children, with significant time working in the PT area and qualification in public health. The active search of the nursing professional for specialization is notorious because the care, reception and individualized approach applied by professionals trained to direct the best therapeutic conduct is extremely important and relevant in the scope of primary health care.¹⁴

A previous study showed that the PT theme was addressed in higher education mainly in lectures of subjects offered in the final semesters of the undergraduate nursing course, corroborating data presented in category 1.⁹ Participants also highlighted the BHU and the internship in this category. The approximation of the nursing student with the BHU is essential because it helps students to correlate the theory studied during graduation with its application in their execution space, preparing them for an efficient and resolute professional practice to manage.¹⁵ A recent integrative literature review presented the contributions and challenges of the supervised internship in the training of the nursing professional and highlighted its relevance, as it puts the student in contact with various daily situations and makes him reflect on his role as a health professional.¹⁶

Other results that deserve to be highlighted are learning from more experienced professionals, the offer of training/ updating courses by the city hall and NUPAD. According to information obtained from the website of the municipal government of Uberaba-MG, courses were offered in 2018 and 2019 and a training on new short-term coverage during the year 2022. NUPAD¹⁷ was created in 1993 with the objective of implementing the Newborn Screening Program of Minas Gerais and carrying out extension, research and teaching activities. All these activities contributed to safe care, as evidenced by the high scores of nurses' self-assessment of their preparation. The realization of training courses and training of health professionals on a regular basis is essential and is reflected in the development of quality of care, since knowledge and technology in health is frequently changing, always aiming at improving the care applied.¹⁸

Participants unanimously described their preparedness to disclose changes in the PT to parents, probably due to constant training and extensive experience in the area, as previously described. Some nurses mentioned that this is not a nursing attribution, but rather the doctor's attribution. Nurses are fundamental to the success of neonatal screening, and are responsible for performing the technique, advising parents about the procedure, the importance and benefits of screening.⁴

Almost all the nurses investigated mentioned the orientation about the PT in prenatal consultations, however, the parents' knowledge was quite compromised in relation to the collection period, purpose and importance. Studies conducted by our research group reinforce these results as it concludes that the knowledge of puerperal women about the PT is superficial and may reflect the performance of the health team and there was a low understanding about the test by pregnant women, with a lack of guidance on the subject in prenatal care.^{6,7} A qualitative study carried out with 30 pregnant women accompanied by Family Health nurses showed that this professional has an essential role in prenatal care, operating as a simplifier and pluralizer of knowledge and ensuring safety to obtain a healthy outcome.¹⁹

In category 3, nurses again mentioned the period for collecting the PT as challenges and obstacles. According to the literature, about 63% of puerperal women would like to receive more clarification about this exam, with emphasis on the appropriate collection period, followed by the diseases screened.⁷ Another showed that 65% of Portuguese mothers did not know when the PT should be performed.²⁰ The collection of the exam was referred to by the participants in this category. According to Silva et al.⁵, studies have shown that there are alarming failures during blood collection from the newborn, thus corroborating altered and unreliable results, requiring a new collection and the urgent training of the team responsible for the procedure. The need to adapt the physical structure was reported and this can directly reflect on the quality of care provided. Among the main factors of dissatisfaction in the work environment, inadequate conditions occupied the second position, with a frequency of 36% in a previous study.²¹

As listed in category 4, the pandemic scenario acted directly on primary care, consequently on test collection. Insecurities about exposure to the virus brought emergency measures that impacted adherence and also the correct period for collection, so family health teams and community health agents needed to act in the active search in order to reduce the impacts of the shortage of patients in the units.²² The Technical Note of the state government of MG-SEI/GOVMG-44440445 established guidelines for the care of newborns (NB) in the scenario of the COVID-19 pandemic.²³ According to this document, in order to reduce the flow of NB in the BHUs, it is recommended that maternity hospitals that already collect for the PT of retained NB, also collect for all NB before hospital discharge. The collection should be performed after 24 hours of life of the NB and if it has not been performed in the maternity hospital, it should be performed at home or scheduled at a specific time in the BHU. According to a recent narrative review of the lite-

24, the pandemic imposed new working conditions on nursing professionals, with changes in care, and it is extremely important to constantly update the nursing team on new guidelines, resolutions and technical standards of the Ministry of Health, Nursing Councils and the National Surveillance Agency.

In the last category, the urgent need for campaigns that would enable better guidance to parents about this exam was evident. In this context, in their review on "General Aspects of Neonatal Screening in Brazil", Mendes et al.¹ emphasize the need for campaigns aimed at greater dissemination of the importance of neonatal screening and the adoption of the 3rd day of life of the NB as the "Day of Neonatal Screening", as already established in France.

Bill 949/22 establishes the "Lilac June" campaign, to be held annually and aimed at raising awareness of the population about the importance of PT. However, this project is currently being processed for approval. However, these initiatives are still incipient and need to be implemented urgently to better visualize this theme, which is extremely important for a favorable outcome in relation to the physical and intellectual health of the neonate.

It is also worth mentioning that, in relation to the care of the newborn, the courses for pregnant women have as main focus breastfeeding and vaccination, and the PT theme is not contemplated. This information is corroborated by a previous study, which described the experience of undergraduate nursing students from a federal university in RS in a group of pregnant women.²⁵ The topics covered were: importance of prenatal care, development of the fetus and pregnancy, nutrition, physical activity, psychological aspects, breastfeeding, sexual activity, childbirth, puerperium and NB care. In relation to the latter, the practice of bathing the NB and the mummification of the umbilical stump was discussed. According to the authors, this is one of the most sought-after topics, especially by primigravidae, as many of them arrive at the course, and already report that their greatest fear is not knowing how to perform NB care. The performance of the PT in the neonate should be included in this theme, however, it was not commented.

Nurses cited in this category the urgent need to incorporate new diseases into the PT. This is already foreseen because Law No. 14,154 was sanctioned, which increases to 50 the number of diseases screened by the PT offered by the Unified Health System (SUS), covering 14 groups of diseases, being staggered in five stages, described below:

Step 1: a) phenylketonuria and other hyperphenylalaninemias; b) congenital hypothyroidism; c) sickle cell disease and other hemoglobinopathies; d) cystic fibrosis; e) congenital adrenal hyperplasia; f) biotinidase deficiency; g) congenital toxoplasmosis;

Stage 2: a) galactosemias; b) aminoacidopathies; c) urea cycle disorders; d) fatty acid beta-oxidation disorders;

Stage 3: lysosomal disorders;

Stage 4: primary immunodeficiencies;

Stage 5: spinal muscular atrophy.²⁶

In Minas Gerais, screening is performed for eight diseases: congenital hypothyroidism, phenylketonuria, sickle cell disease, cystic fibrosis, congenital adrenal hyperplasia and biotinidase

deficiency, fatty acid beta-oxidation defects (five diseases) and congenital toxoplasmosis.¹⁷ In January 2022, there was an expansion beyond those six diseases previously screened, according to Ordinances no. 822 of June 6, 2001²⁷ and no. 2829 of December 14, 2012.²⁸ It is worth remembering that congenital toxoplasmosis and fatty acid beta-oxidation defects belong to stages I and II, respectively, and therefore implementation is gradual.

FINAL CONSIDERATIONS

The study shows that nurses provide adequate assistance in the PT, attending in a holistic and qualified way the mother/neonate binomial. The data demonstrate the relevance of the qualification for the role of nurses in the area of maternal and child health.

It is noteworthy that there are no studies in the literature with this focus (original article) to compare the results, which made critical analysis difficult. This research was conducted from the perspective of nurses, excluding nursing technicians. Considering the training of the latter, mentioned in category 3, this study could be applied to them in order to verify the reproducibility of the results, which would also enable a generalist view of the scientific findings.

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