TEXTO & CONTEXTO ENFERMAGEM
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NURSING AND DESIGN IN THE CREATION OF HEALTH PRODUCTS: APPROACHING AREAS AND SOLVING PROBLEMS

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ABSTRACT

Objective: to describe a methodological proposal for product development in the health area through the perspective of design.
Method: Theoretical and methodological reflection, based on the experience and knowledge of the authors in studies related to technological production and innovation in nursing.
Results: the methodological proposal consists of the following steps: 1) Briefing; 2) data collection; 3) analysis of the problem; 4) concept; 5) generation of alternatives; 6) selection of the best alternative; 7) refining the solution; 8) prototype; 9) tests; 10) modifications; and 11) implementation. The design proposal is shown as a method of investigation and seeks to equip health professionals and related areas for the elaboration of studies with the potential to develop products, at all stages.
Conclusion: the approximation of knowledge and practices in the area of design with that of nursing enables the identification of problems and their resolution with creativity and empathy, contributing to innovation and knowledge production.

DESCRIPTORS: Product technology. Technological Development and Innovation Projects. Innovation. Methods. Nursing.

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ENFERMAGEM E *DESIGN* NA CRIAÇÃO DE PRODUTOS PARA A SAÚDE: APROXIMANDO ÁREAS E RESOLVENDO PROBLEMAS

RESUMO

Objetivo: descrever proposta metodológica de desenvolvimento de produtos à área da saúde através da perspectiva do *design.*
Método: reflexão teórica e metodológica, a partir da experiência e conhecimento das autoras em estudos relativos à produção tecnológica e inovação em enfermagem.
Resultados: a proposta metodológica é composta pelas etapas: 1) Briefing; 2) levantamento de dados; 3) análise do problema; 4) conceito; 5) geração de alternativas; 6) seleção da melhor alternativa; 7) refino da solução; 8) protótipo; 9) testes; 10) modificações; e, 11) implementação. A proposta do *design* se mostra como um método de investigação e busca instrumentalizar os profissionais da saúde e áreas afins para elaboração de estudos com potencial de desenvolver produtos, em todas as etapas.
Conclusão: a aproximação dos saberes e práticas da área do *design* com a da enfermagem possibilita a identificação de problemas e sua resolução com criatividade e empatia, contribuindo para inovação e produção de conhecimento.

DESCRITORES: Tecnologia de produtos. Projetos de Desenvolvimento Tecnológico e Inovação. Inovação. Métodos. Enfermagem.

ENFERMERÍA Y DISEÑO EN LA CREACIÓN DE PRODUCTOS EN SALUD: ÁREAS DE APROXIMACIÓN Y SOLUCIÓN DE PROBLEMAS

RESUMEN

Objetivo: describir una propuesta metodológica para el desarrollo de productos sanitarios desde la perspectiva del diseño.
Método: reflexión teórica y metodológica, a partir de la experiencia y conocimiento de los autores en estudios relacionados con la producción e innovación tecnológica en enfermería.
Resultados: la propuesta metodológica está compuesta por los pasos: 1) Briefing; 2) recopilación de datos; 3) análisis de problemas; 4) concepto; 5) generación de alternativas; 6) selección de la mejor alternativa; 7) refinamiento de la solución; 8) prototipo; 9) pruebas; 10) modificaciones; y, 11) implementación. La propuesta de diseño se muestra como un método de investigación y busca equipar a los profesionales de la salud y áreas afines para realizar estudios con potencial para desarrollar productos, en todas sus etapas.
Conclusión: la aproximación de saberes y prácticas en el área de diseño con la de enfermería posibilita la identificación de problemas y su resolución con creatividad y empatía, contribuyendo a la innovación y producción de conocimiento.

DESCRIPTORES: Tecnología de producto. Proyectos de Innovación y Desarrollo Tecnológico. Innovación. métodos. Enfermería.

INTRODUCTION

Many studies have been promoted in the area of health, positively impacting well-being and economic development. Since the 2000s, there has been an increase in technological development with the creation of the Innovation Law and the tax incentives of the Law of Good, which allowed an expansion of technological production in the country[1]. According to the World Health Organization, the incorporation of technology in the health sector is an essential component of health systems and should be based on scientific evidence of quality, also implying its evaluation[2].

The concern with innovation in the health area is endorsed by the Ministry of Science and Technology, which developed the National Policy of Science, Technology and Innovation in Health, part of the National Health Policy, aiming to contribute to sustainable national development, stimulating the production of knowledge that meets the needs of the Unified Health System[2]. This is necessary due to Brazil's dependence on other countries regarding access to health technologies, such as drugs and medications, health equipment, blood products, among others[2].

Therefore, there are many challenges in this area of production and use of new technologies. It is necessary to consider the need for integration between technology and science with the subjective issues of care[3]. In the area of health and, in this context, in nursing, the daily life of professionals, in addition to involving challenges related to their care activities, is also a hotbed for the development of new systematics for the domain of activity. It should be emphasized that technological innovation contributes to the quality and safety of care and for this the nurse must seek constant theoretical and practical training, gaining knowledge and developing new technologies[4].

Technological research is still in its infancy in nursing and, in this sense, the articulation between design and nursing is essential and can be generous in several directions. New effective and efficient solutions can not only be inserted in the health universe through products and services, but can also generate a range of jobs, partnerships and taxes related to them.

In the daily work of nurses, this is often driven to the development of new products, and/or adaptations in existing ones, to adequately provide their care, either by the lack of equipment, products or even services that respond to the needs of their activities. This fact allows the verification of a series of "gaps and strands" for the creation of new products and services that address these needs.

This does not make them designers by empirical training, but rather professionals aware of the needs regarding daily life who, if guided by a designer, or even working in partnership with one, can come to create solutions that best meet the requirements they know well. And, in this observation, it is possible to understand the great field for the development of products and services, often in an innovative way, in an area that, in view of its urgency and dynamics, is lacking in more effective and efficient solutions.

In this context, this study aims to describe a methodological proposal for the development of products for the health area from the perspective of design.

PRODUCT DESIGN PROJECT METHOD

The methodological proposal designed to bring the project process to the universe of nurses follows distinct but common stages of the methodological processes of design for problem solving. Many of them exemplify these processes as sequences of stages of expansion and synthesis of the act of surveying and deepening the problem, as well as creativity, until reaching the best solution to the problem.

The Design Council, a UK non-profit organization, visually described this process in 2005 as a sequential diagram of two diamonds to exemplify the expansion and synthesis of what happens at different moments of the design act, i.e. the Discover, Define, Develop and Deliver phases[5] (Figure 1).

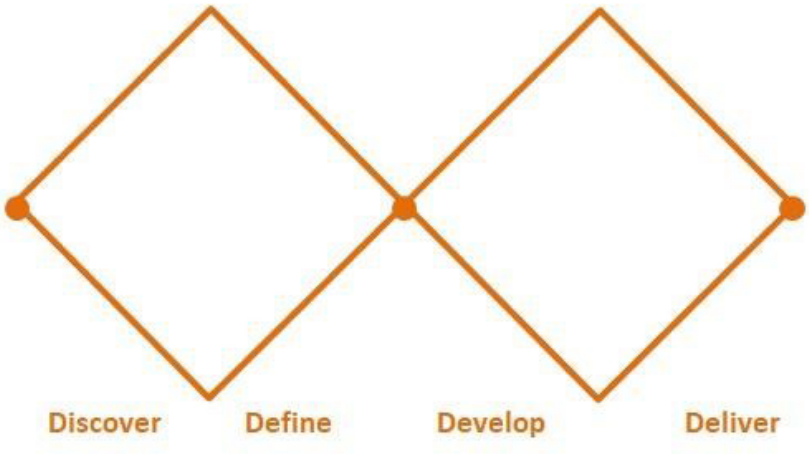

Figure 1 – Double Diamond Method. Florianópolis, Santa Catarina, Brazil, 2022.

Credits: Design Council, 2007[5].

The “Discover” phase seeks information, investigates the market, users and what else is pertinent to the initial problem exposed, considering everything related to its context. This information base gives rise to a deeper understanding of the problem initially presented, which will guide the next steps.

The “Define” phase focuses on delimiting and understanding, then, what actually occurs and needs to be solved, in organizing and generating the information, as well as planning the development of the project.

The “Develop” phase focuses on the creation and development of a possible solution and project management to choose the one that can best move on to the final phase of the process.

The “Deliver” phase focuses on testing, finalization and approval of the developed solution[4].

This process does not need to be linear, but rather flexible and cyclical, which allows the possibility of returning to previous steps if necessary. This possibility of returning to the steps/phases is also discussed by other designers. Some explain it in visual schemes, without the concern to represent the moments of expansion and creative synthesis, even knowing that they occur. They focus their visual schemas only on demonstrating the sequence of projective steps. The fact is that the act of generating ideas opens up a universe of solutions, and the act of choosing one, or some, funnels the same universe to a possible path to be taken – expansion and synthesis.

The main design methods include Munari (1981), Bonsiepe (1984), Bomfim (1995), Baxter (1998) and Lobach (2001), among others as references[6]. A study that evaluated the projective method of Product Design, using the method proposed by Bonsiepe, mentions that design involves different areas of knowledge, therefore, it has a character that goes beyond linear and disciplinary thinking[6].

The designer Gui Bonsiepe[7], exemplifies visually (Figure 2), and generically, the theoretical structures of design steps of methods widely known by designers who have broadly validated their proposal.

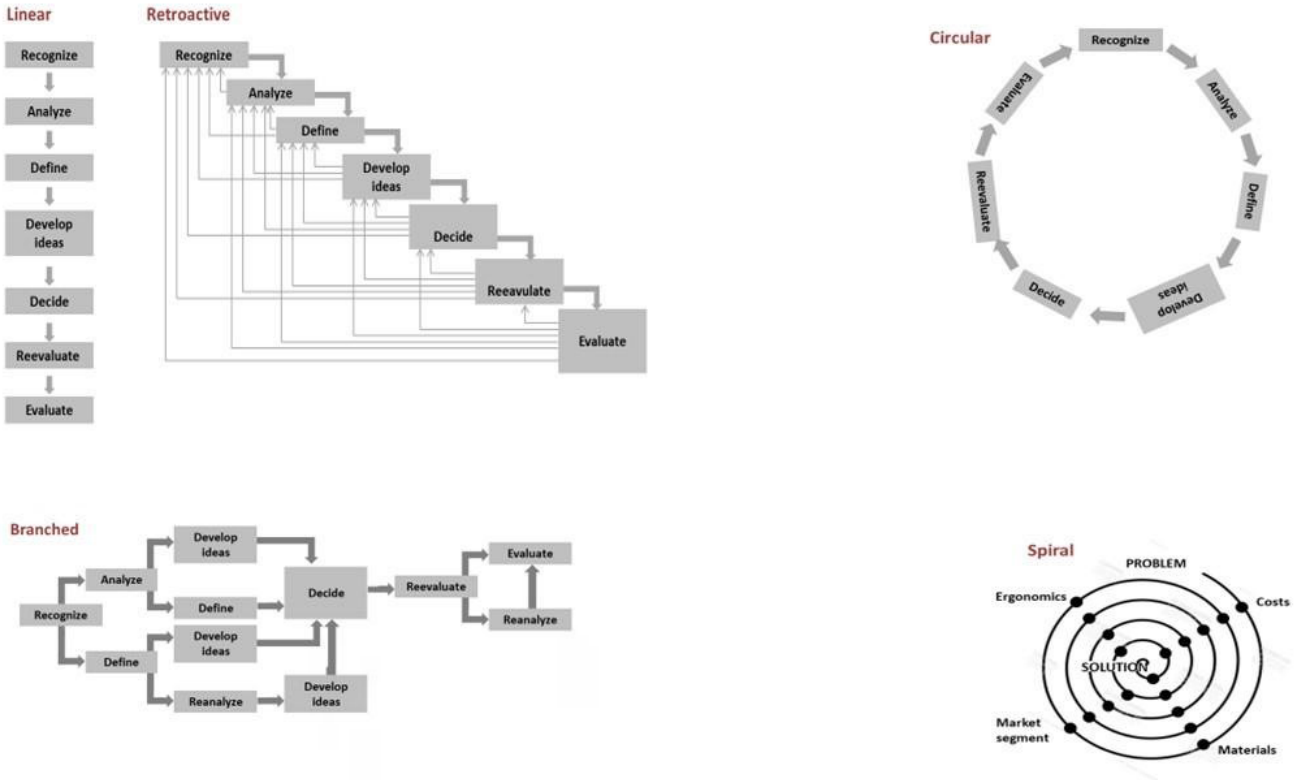

Figure 2 – Theoretical structures of design methods, adapted from Bonsiepe, 1984 and Bomfim, 1995[8]. Florianópolis, Santa Catarina, Brazil, 2022.

Regardless of the return, or not, to the previous steps, it should be noted that the authors, although they can use different names to their design phases, have similar objectives to the design council's double diamond method: discover, define, develop and deliver.

Bonsiepe[7] identified them generically in his image as: recognize or problematize; analyze; define; develop ideas; decide; reevaluate; and evaluate. These steps can also be generalized, within a process of expansion and synthesis, in parallel with Bonsiepe: 1. identify the problem; 2. structure what is actually necessary to solve; 3. collect information; 4. create solutions; 5. choose solutions; 6. cut the solutions; 7. Prototype and implement; 8. Evaluate.

It is explained that a stage of "concept" is adapted, by the highlighted authors, in the stage of development of ideas/act of creating. This phase serves to give direction to the generation of alternatives, so that they are directed towards a specific purpose.

METHODOLOGICAL PROPOSAL FOR PRODUCT DEVELOPMENT IN THE HEALTH AREA

The first step in structuring the relationship between health and design is to provide health professionals with the basic knowledge of a design process, so that they become familiar with the act of creating solutions, understanding design as a universe that focuses on solving problems, whose center is the user and their respective context.

Therefore, there is a direct and multidisciplinary relationship of involvement of activities, materials, processes and professionals from various areas related to the context in which the problem to be solved is included. It should also be noted that the result of the problem, or the development of the

project, is based on the scientific method, that is, on the definition of the theme/object of investigation, from a research question in which hypotheses of solution are created, the method is established and the knowledge is produced. A research design constructed through its basic components is fundamental for direction and guidance at any stage of the research, being flexible in coming and going, as intended with the design[9].

The structuring of the project model of products and services (creation of solutions) in health/nursing, which is now presented, was proposed from the combination of other design methods, adapted to the reality of health, in important aspects of its universe to be taken into account in the search for solutions.

This method consists of the following steps: (1) Briefing (2) data collection, (3) problem analysis, (4) concept, (5) generation of alternatives, (6) selection of the best alternative, (7) refining of the solution, (8) prototype, (9) tests, (10) modifications and (11) implementation, as shown in the Figure 3.

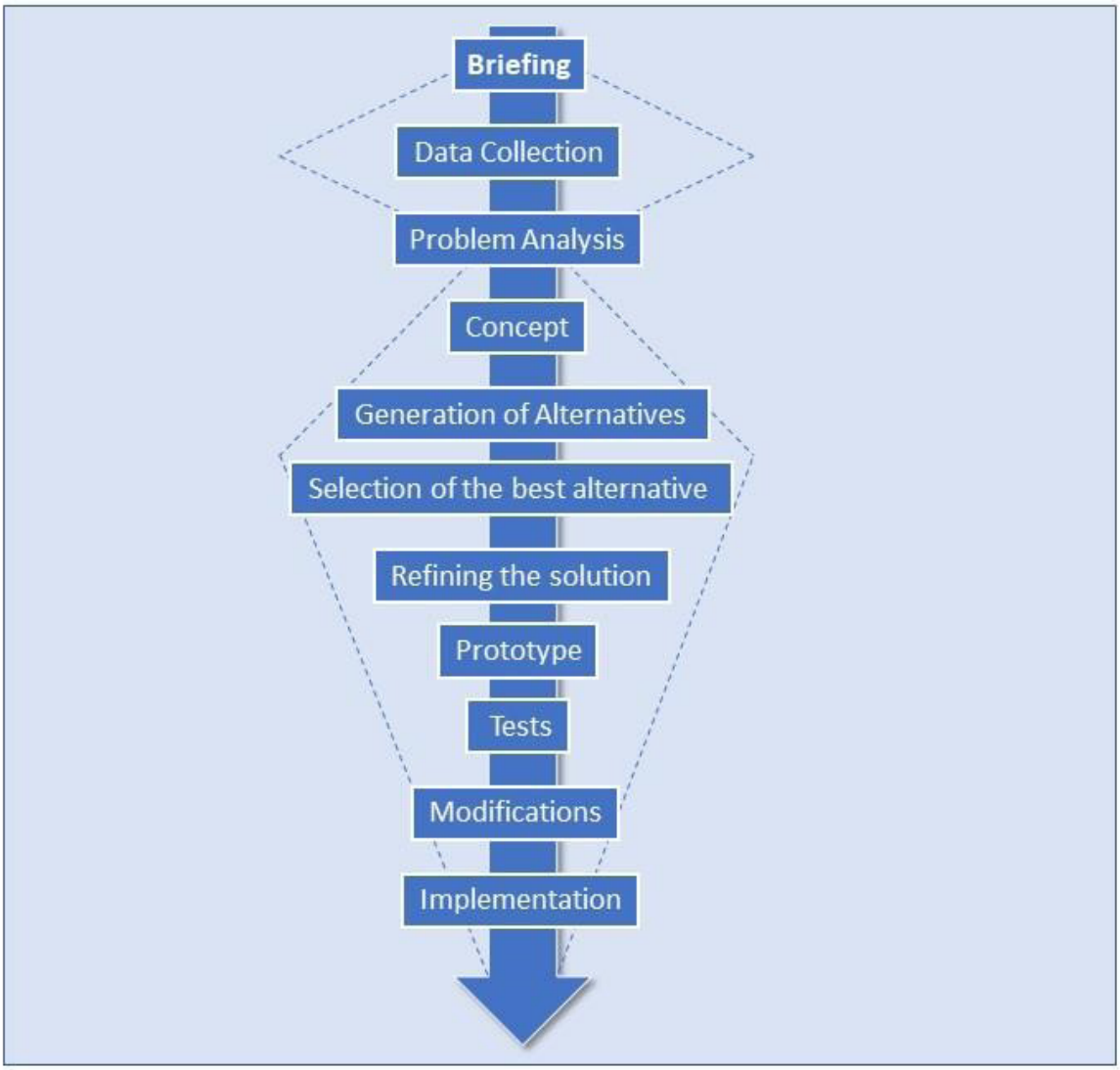

Figure 3 – Scheme of the phases of the proposed method for the health area (Stein Method). Florianópolis, Santa Catarina, Brazil, 2022.

Every project must be developed based on a problem, or need, detected in care practice. Thus, the first stage, called Briefing*,* corresponds to the collection of information regarding the problem that is expected to be solved, and consequently, what product "initially" is expected to be developed. It is important to identify information before designing the project that will allow a further deepening of the initial problem presented. The researcher must answer some questions such as: what is the main objective of the project? Why is the project being developed? What other goals does the project have? Which audience is it intended for? Who will collaborate with the project? This step should preferably be carried out in partnership with the people for whom the product is intended

The second step is data collection where the requirements involved in the problem and the attributes required for its resolution are listed. Based on these requirements, the analysis of the problem is carried out, taking into account the target audience and the feasibility of its resolution. This step allows an in-depth understanding of the problem and questions, including what was initially considered, and may allow additional and/or differentiated comments.

The concept stage defines which requirements are fundamental in the product being developed, as well as the direction of the solutions, from the definition of one or more concepts to manage ideas/ creativity. This step serves to help and delimit the field of definition of ideas. For example: creating a lipstick for a business woman that conveys a concept of "lightness" and "practicality" (Figure 4). Thus, the researcher should seek to deepen their knowledge of the concept of lightness and practicality, in order to find which characteristics would be essential for their product. This directive would prevent, for example, ideas that proposed solutions contrary to these concepts, such as conceptually "robust" or "unpractical – complex" solutions.

Figure 4 – Semantic panels of the concept "lightness". Florianópolis, Santa Catarina, Brazil, 2022.

Credits: Pexels Images – https://www.pexels.com

From the listed concepts, the concept map is built, which consists of a diagram, or panel of one or more images, which seeks to visually expose, relate and rank the concepts. This tool encourages the ability to analyze, synthesize, have flexibility, curiosity, creativity and participation.

Alternatives are generated after this step. This is a phase in which creativity manifests itself strongly. The process of generating alternatives in design is based on intuitive methods and systematic methods. Intuitive ones can be developed through techniques such as brainstorming, brainwriting, method 635, Delphi method, analogies, synthetic method and MESCRAI (Modify, Delete, Replace, Combine, Rearrange, Adapt, Invert)[9–10]. Systematic methods follow a logical and systematized

sequence of activities, such as the Functional Synthesis method, the Morphological Matrix Method and the Value Analysis Method[10–12].

Below is a summary table (Figure 5) with some techniques that can be useful in the process of generating alternatives, as they stimulate creativity[13–17].

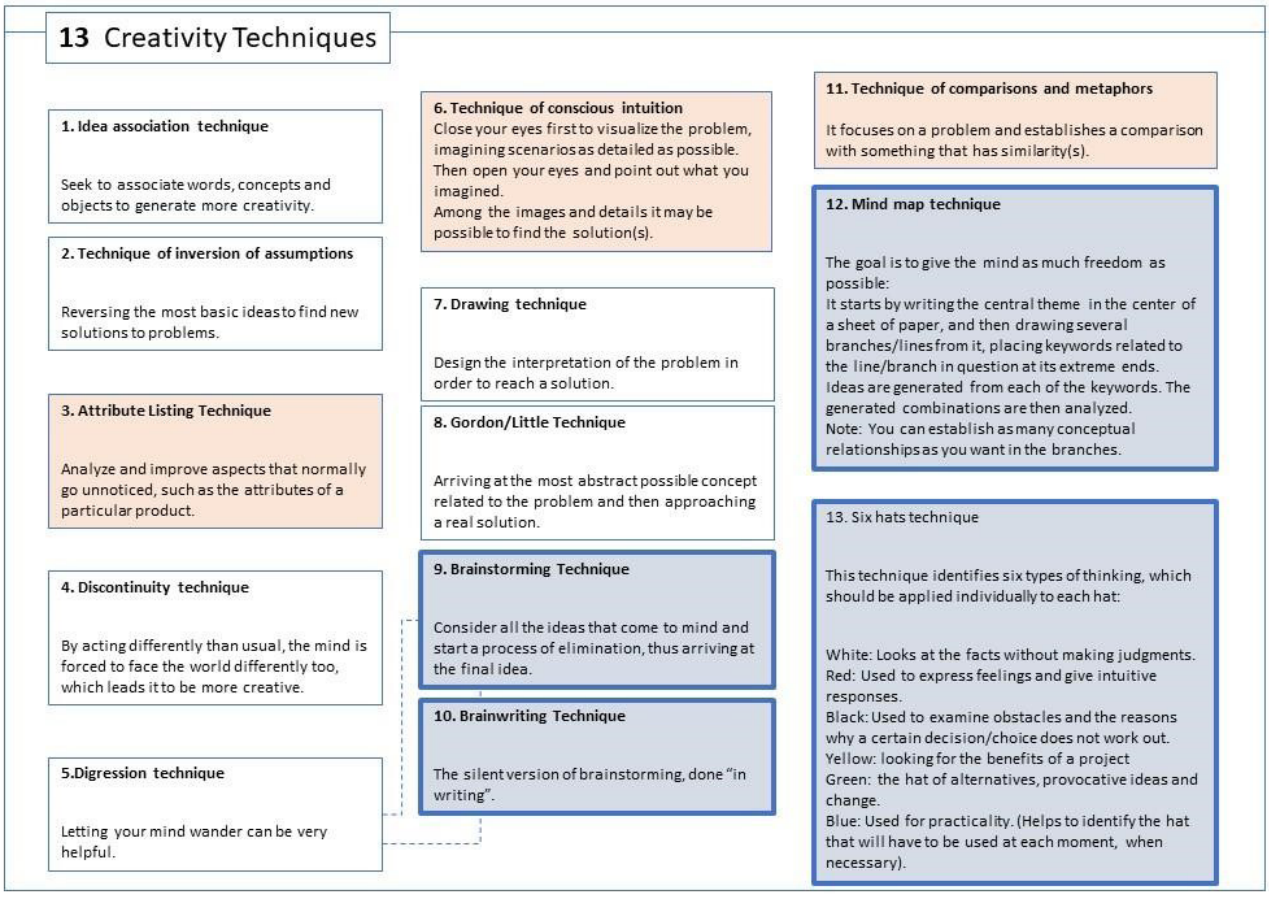

Figure 5 – Creativity techniques. Florianópolis, Santa Catarina, Brazil, 2022.

Choosing between one technique or another is up to the project team and their affinity with each technique. In the design method created for the health area, the use of brainstorming, or brainwriting, mental map, or the six hats technique is suggested, which is usually quite fun and interactive, where participants feel comfortable in giving their suggestions/ideas motivated by the hats they wear, that is, they can propose "whatever they want" without fear of judgment.

A study of an educational intervention practice on interpersonal relationships, developed with a multidisciplinary team, in a Psychosocial Care Center[17], describes the use of the mental map technique used with the health team professionals. They received colorful post-it notes, in which each color was used to answer a certain question and these answers were organized in the form of important keywords that were later discussed as a team, generating a visual map, i.e., a mental map. The study also reports the six hats technique, in which each professional received a hat and instructions on how to use them, and were encouraged to make their observations and contributions in order to think about hypotheses of solution for the team to work harmoniously[17].

After this stage of generating ideas, the best suggested alternative is followed, when the designer/researcher discusses the solution proposals that emerged in the previous stage. In view of the survey of the best alternatives, the next step is to refine the chosen solution, which should have a deepening in the different aspects related to the indicated solution, linking elements such as cost, material, real possibilities of execution, among others.

In view of the solution listed, the prototyping stage begins, with the construction of a physical model of the proposed solution, which can be evaluated, including the requirements identified as priority and necessary. When it is not possible to perform the physical model, it is possible to work with simulations close to it, as in the case of services, applications, among others, that allow them to be tested in some way. After the prototype has been developed, it needs to be put to the test, i.e. the testing stage commences. At this stage, the needs for product adaptations are raised, which leads to the modification stage and ending with the implementation stage, in which the solution will be effectively adopted.

It is important to point out, as in the Bonsiepe[7] model, that these are not watertight steps. There is flexibility, that is, a back and going, from the evaluation carried out at each stage. In this sense, it also approaches that proposed by Design Council[5] in the double diamond method, in which there is a "certain dance", until the solution is effectively found and constructed. Thus, the suggested method seeks solutions based on systemic thinking, with a logic of reasoning that requires the resumption of previous phases, when necessary, in order to establish viable solutions, involving multidisciplinary teams as a way to create the necessary conditions for the generation of ideas to be as broad as possible. For this, the method requires an open mind, without pre-established judgments or tendencies, willingness for the new, to articulate the divergences and convergences that may arise[18].

It is noteworthy that the model was designed by one of the authors – Mônica Stein, from her experience with design and her insertion in the Postgraduate Program in Nursing Care Management, professional modality, at the Federal University of Santa Catarina – called the Stein Method.Since its presentation to the program, this method has already been used in its entirety or in some of its elements. Its first practical use took place in 2017, in a master's thesis, in which the methodological steps were developed for the creation of a therapeutic pillow for postoperative use in cardiac surgery[19]. Another experience took place in the application of one of the suggested creativity techniques by the method, aiming to improve the interpersonal relationship of the team of a psychosocial care center[17].

The present study seeks to contribute to the health area, especially to nursing, with a view to solving practical problems through a method applied in the development of products and processes. A limitation of this study is that the method is still in its infancy.

CONCLUSIONS

Innovation in health is today a fundamental part of problem solving, but also, as a necessity in the monitoring of new technologies, such as healthtechs, with the use of digital platforms, creation of mobile devices, technologies that often break the established standards and, in others, imply only some modifications or adjustments.

For the implementation of new technologies in the health area, the limits of the disciplinary areas need to be broken, driven by the need to seek knowledge in other areas such as information technology, engineering and design. This openness also allows the development of critical thinking, based on the observation of reality, focused on new patterns and details, following a logical and structured reasoning, stimulated by curiosity, empathy and co-creation, in which the analysis of reality is articulated in an objective way, without forgetting the subjectivity that involves relationships, as well as, enabling creativity, critical thinking that drives the health area with a view to assisting those involved in the process.

It was in this sense that we sought to structure a method that supports the development of products in the health area and, specifically, in the nursing area, which would allow articulating creativity and sensitivity to critical thinking, with a view to solving problems.

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NOTES

CONTRIBUTION OF AUTHORITY

Conception of the study: Stein M, Costa R, Gelbcke FL.
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Writing and/or critical review of the content: Stein M, Costa R, Gelbcke FL.
Review and final approval of the final version: Stein M, Costa R, Gelbcke FL.

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