



CONSTRUCTION AND IMPLEMENTATION OF A MEDICINAL GARDEN: A UNIVERSITY EXTENSION PROJECT

Construção e implementação de um horto medicinal: um projeto de extensão universitária

Construcción e implementación de un huerto medicinal: un proyecto de extensión universitaria

Marcio Rossato Badke 

Federal University of Santa Maria (Universidade Federal de Santa Maria - UFSM) - Santa Maria (RS) - Brazil

Daiana Cristina Wickert 

Federal University of Santa Maria (Universidade Federal de Santa Maria - UFSM) - Santa Maria (RS) - Brazil

Gabriela Oliveira 


Federal University of Santa Maria (Universidade Federal de Santa Maria - UFSM) - Santa Maria (RS) - Brazil

Jordana Lima da Silva 

Federal University of Santa Maria (Universidade Federal de Santa Maria - UFSM) - Santa Maria (RS) - Brazil

Hentiele Feksa Lima 

Federal University of Santa Maria (Universidade Federal de Santa Maria - UFSM) - Santa Maria (RS) - Brazil

Maria Denise Schimith 

Federal University of Santa Maria (Universidade Federal de Santa Maria - UFSM) - Santa Maria (RS) - Brazil

Laís Mara Caetano da Silva 

Federal University of Santa Maria (Universidade Federal de Santa Maria - UFSM) - Santa Maria (RS) - Brazil

Silvana Bastos Cogo 

Federal University of Santa Maria (Universidade Federal de Santa Maria - UFSM) - Santa Maria (RS) - Brazil

ABSTRACT

Objective: To report experience in the process of constructing and implementing a medicinal garden for the maintenance and health care of a community. **Synthesis of data:** This was an experience report from the development of a university extension project entitled "Learning Space - the medicinal clock of the human body" developed in the neighborhood of a municipality in the central region of Rio Grande do Sul state, Brazil. Community members, professionals from the fields of Nursing, Biology, Agronomy, and Landscaping, Nursing students, high school students and scholarship students from a higher education institution took part in the project. The activities were conducted from April to December 2017 and 2018. The clock was developed in a public territory of the community, consisting of 26 medicinal plants subdivided into 12 flowerbeds and central space, and cultivated two medicinal plants in each of them. Each of these divisions corresponds to the energetic peak of an organ of the human body, following a cycle, except the center, which is the epithelial tissue, which is an adaptation. **Conclusion:** The achievement of the project provided the opportunity to rescue and value the use of medicinal plants among teachers, students, and the community, contributing to shared care and promoting the health of all.

Descriptors: Complementary Therapies; Plants, Medicinal; Health Promotion.

RESUMO

Objetivo: Relatar a experiência no processo de construção e implementação de um horto medicinal para a manutenção e o cuidado à saúde de uma comunidade. **Síntese dos dados:** Tratou-se de um relato de experiência oriundo do desenvolvimento de um projeto de extensão universitária intitulado "Espaço de aprendizagem - relógio medicinal do corpo humano", desenvolvido no bairro de um município da região central do estado do Rio Grande do Sul, Brasil. Participaram do projeto integrantes da comunidade, profissionais das áreas de Enfermagem, Biologia, Agronomia e Paisagismo, acadêmicos de Enfermagem, estudantes de ensino médio e bolsistas estudantes de uma instituição de ensino superior. As atividades foram realizadas nos meses de



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abril a dezembro dos anos de 2017 e 2018. O relógio foi desenvolvido em um território público da comunidade, constituído por 26 plantas medicinais, subdivididas em 12 canteiros e espaço central, sendo cultivadas duas plantas medicinais em cada um deles. Cada uma dessas divisões é correspondente ao pico energético de um órgão do corpo humano, seguindo um ciclo, exceto o centro, em que está o tecido epitelial, sendo esta uma adaptação. **Conclusão:** A realização do projeto oportunizou o resgate e a valorização do uso de plantas medicinais entre professores, discentes e comunidade, contribuindo para o cuidado compartilhado e promovendo a saúde de todos.

Descritores: Terapias Complementares; Plantas Medicinais; Promoção da Saúde.

RESUMEN

Objetivo: Relatar la experiencia del proceso de construcción e implementación de un huerto medicinal para la manutención y el cuidado de la salud de una comunidad. **Síntesis de los datos:** Se trata de un relato de experiencia a partir del desarrollo de un proyecto de extensión universitaria intitulado “Espacio de aprendizaje – reloj medicinal del cuerpo humano” desarrollado en el barrio de un municipio de la región central del estado de Rio Grande do Sul, Brasil. Han participado del proyecto los integrantes de la comunidad, los profesionales de las áreas de Enfermería, Biología, Agronomía y Paisajismo, los académicos de enfermería, los estudiantes de educación secundaria y los becarios estudiantes de una institución de educación superior. Se realizaron las actividades en los meses entre abril de 2017 y diciembre de 2018. El reloj ha sido desarrollado en un territorio público de la comunidad formado por 26 plantas medicinales subdivididas en 12 canteros y espacio central donde se ha cultivado dos plantas medicinales en cada uno de ellos. Cada una de esas divisiones corresponde al punto máximo de energía de un órgano del cuerpo humano, siguiendo uno ciclo, excepto el centro en el cual está el tejido epitelial que es una adaptación. **Conclusión:** La realización del proyecto ha permitido el rescate y la valoración del uso de plantas medicinales entre los profesores, los discentes y la comunidad contribuyendo para el cuidado compartido y promocionando la salud para todos.

Descriptores: Terapias Complementarias; Plantas Medicinales; Promoción de la Salud.

INTRODUCTION

Popular knowledge and care practices, even though, at times, are devalued by science and the traditional health system, continue to integrate the culture of care practices of the population⁽¹⁾. The use of medicinal plants for the treatment, cure, and prevention of diseases follows human evolution, constituting the customs, knowledge, and traditions of different societies, even though their use is based on empirical knowledge, disseminated by popular knowledge among generations^(2,3). This fact reinforces the importance of ethnobotanical studies for the rescue, registration, and valorization of this type of knowledge, preventing it from being forgotten over time⁽⁴⁾.

With the advent of Natural Sciences and the scientific method, in the 19th century, medicinal plants became of interest to scholars, who sought to prove the effectiveness and safety of their use⁽⁵⁾. This fact made medicinal plants come to be seen as raw material for the creation of new drugs, distancing them from empirical use⁽⁶⁾.

After the 1980s, herbal medicine programs appeared in the public health network, from the creation of the Resolution of the Interministerial Commission for Planning and Coordination of 1988, which regulated the use of herbal medicines in health services⁽⁷⁾. Among the motivations for using phytotherapy, the increase in therapeutic resources, the rescue of popular knowledge, the preservation of biodiversity, the promotion of agroecology, social development, in addition to environmental, popular, and permanent education⁽⁸⁾.

The Resolution of the Collegiate Directorate of the National Health Surveillance Agency (*Resolução de Diretoria Colegiada - RDC*) No. 26 defines herbal medicine as the product obtained from the vegetable raw material for the prophylactic, curative and/or palliative purpose. In this category are included herbal medicines and traditional herbal products, while the medicinal plant is considered the plant species, being used for therapeutic purposes⁽⁹⁾.

The development of herbal medicine programs resulted in several actions arising from the construction of herbal medicine production laboratories to the creation of medicinal gardens⁽¹⁰⁾. Among the public policies related to medicinal and phytotherapeutic plants, Decree No. 5,813 of 2006 stands out, which instituted the National Policy of Medicinal and Phytotherapeutic Plants, and Interministerial Ordinance No. 2960, of 2008 being fundamental for the introduction of medicinal plants and herbal medicines in the Unified Health System (*Sistema Único de Saúde - SUS*)⁽¹¹⁾.

In 2006, the National Policy on Integrative and Complementary Practices (*Política Nacional de Práticas Integrativas e Complementares - PNPIC*) was instituted in the SUS, emphasizing the insertion of Integrative and Complementary Health Practices (*Práticas Integrativas e Complementares - PICS*) in Primary Health Care (*Atenção Primária à Saúde - APS*). However, although medicinal plants are among the main therapies used *in natura* or manipulated by Brazilians⁽¹²⁾, their incorporation into the public health system occurs slowly⁽¹²⁾.medicine

The state of Ceará can be cited as the birthplace of “living pharmacies”, as it has medicinal plant gardens, herbal medicine production laboratories, activities and guidance manuals offered by SUS⁽¹⁾, following State Law No. 12,951, of October 7, 1999, which instituted the State Policy for the Implementation of Phytotherapy in Public Health⁽¹³⁾.

However, studies have shown that, despite the development, expansion, and diffusion of the theme in the country, there is a precariousness concerning the process of training health professionals, since students can complete their undergraduate course without having contact with the study of medicinal plants^(14,15). Thus, in relation to guidance on medicinal plants, studies show a deficit in knowledge, evidenced in the training process of health professionals, constituting an obstacle to the performance and implementation of activities related to the use of medicinal plants in health services^(8,16).

The lack of knowledge about the PNPIC⁽¹²⁾ is observed in national studies^(8,12,16,17) and some authors^(18,19) attribute this fact to the little disclosure, skepticism and the fact that professionals are still prone to the biomedical model, in addition to the fact that this subject is not addressed in academy, further encouraging these standards. By ignoring this theme during the training of health professionals, the implementation of this policy becomes more difficult, as knowing the PICS would make it possible to support the use of these therapies and ensure safety for the user and the prescriber^(17,19).

These facts reinforce the importance of higher education institutions (HEIs) to include this training in the curriculum of courses in the health area, mainly in Nursing and Medical School courses, since they are the professionals who most prescribe herbal medicines^(20,21). Studies reveal that these professionals do not receive instruction during their undergraduate courses on herbal medicine and medicinal plants and that their knowledge of herbal medicine is based mainly on popular culture^(17,21). Thus, the study of this theme can contribute to the better relationship between nurses and patients, with a view to comprehensive care, as they would be preparing, training, and motivating these professionals to indicate medicinal plants and herbal medicines⁽²²⁾.

Associating this knowledge with phytotherapy, Chinese medicine developed the Medicinal Garden - human body clock, which seeks to cultivate medicinal plants that relate to the twelve meridians, facilitating their identification and association with body organs and systems⁽²³⁾.

The insertion of the nursing professional in this environment is recognized by Resolution No. 581/2018, which provides for nurses' specialties in several areas, including acupuncture, herbal medicine, homeopathy, orthomolecular, floral therapy, foot reflexology, reiki, yoga, therapeutic touch, music therapy, chromotherapy and hypnosis⁽²⁴⁾. Thus, it is possible to mention the transversality of the theme with the (*Política Nacional de Promoção da Saúde - PNPS*)⁽²⁵⁾ and with the Phytotherapics and Medicinal Plants Program⁽¹⁰⁾, aiming at the promotion of community health.

Therefore, the theme is relevant, since it intends to describe the experience of a new extension and research activities, aimed at sharing knowledge with the population about the correct use, cultivation, and care of medicinal plants and health promotion through the elaboration of an integrated medicine garden clock between university and population. The present report is justified due to the creation of a didactic space of coexistence and sharing of ideas, which had the purpose of bringing academic and popular knowledge together. This study aimed to report the experience in the process of building and implementing a medicinal garden in a community for health maintenance and care.

DATA SYNTHESIS

Experience report originated from the experience of an extension project developed in a municipality in the interior of Rio Grande do Sul, Brazil, in a community in a situation of economic and social vulnerability, under the objectives of the PNPS⁽²⁵⁾. The activities were carried out between April and December 2017 and 2018. In addition to the local community, Nursing, Biology, Agronomy, and Landscaping professionals, Nursing students, and high school students participated in the activity. It is noteworthy that the project involved two fellows from the Extension Incentive Fund (FIEX) of an HEI.

The present study originated from an extension project that is registered on the Project Portal of the Federal University of Santa Maria (*Universidade Federal de Santa Maria - UFSM*), Registration No. 047139, entitled Learning space - the medical clock of the human body⁽²⁶⁾.

The work team's approach to the community began with academic activities aimed at preventing systemic arterial hypertension (SAH), identified during practical classes at the reference Health Unit. As a result, a “herbal salt” production workshop was held, aimed at hypertensive and diabetic patients, in which participants were encouraged to reduce their consumption of salt and salt seasonings from simple attitudes, such as removing the salt shaker from their table, consume natural seasonings and avoid processed foods⁽²⁷⁾.

Herbal salt consists of the addition of fresh herbs, such as oregano, rosemary, basil and parsley, to table salt, to reduce sodium intake and still make foods spicy and tasty. It is noteworthy that the addition of natural spices in the diet constitutes one of the ten steps for a healthy diet for people with SAH⁽²⁸⁾. Besides, aromatic herbs not only influence the reduction of sodium consumption but also enable the individual to benefit from its therapeutic properties⁽²⁹⁾.

During the handling of the herbs, the participants revealed to make use of medicinal plants, being mentioned by the work team that, in some municipalities, there were community medicinal gardens, explaining their operation and construction, as well as their importance for the community in which they were inserted, but which, unfortunately, did not exist in that region of the municipality. After the workshop, users showed interest on the subject of medicinal plants and the desire to develop the construction and maintenance of the human body's medical clock, which relates the use of medicinal plants to human health.

In this way, we sought to strengthen the bond and articulation between the HEI and the community, continuing with multidisciplinary educational activities, mainly focused on health promotion and disease prevention⁽²⁵⁾, associated with systematic garden care. It is noteworthy that meetings were held with the community to discuss the function of each plant, its handling, and consolidating the construction of the human body's medical clock by addressing the population's doubts regarding its use and maintenance. Subsequently, a term of commitment was proposed to the local population, which accepted the HEI's entry into the community, assuming the commitment and partnership for the construction and maintenance of the clock, in a process of co-responsibility of the community and educational institution.

The community participated in all the planning and construction stages of the vegetable garden, one of which being the choice of the implementation site, which took place from HEI meetings with the population, with public land next to the church being defined, with easy access to residents, with the right conditions, such as good sunlight and fertile soil. Then, the demarcation and measurement of the beds, weeding, turning, and preparing the land was carried out, in addition to the cultivation of seedlings of medicinal plants that formed the medicinal garden.

A partnership was established with the Technical Assistance and Rural Extension Company (*Empresa de Assistência Técnica e Extensão Rural - EMATER*), aiming to qualify the activities, because of the interdisciplinarity and complexity of the theme, associating the popular use of plants with the times when the human body shows greater activity, according to Traditional Chinese Medicine (MTC)⁽³⁰⁾. The materials used as work tools were: hoe, shovel, buckets and others. For the division of the beds, bricks of the flowering type were used, and the beds were filled with organic compost owned by the residents of the community, as well as organic fertilizer.

The garden consists of 26 medicinal plants, subdivided into 12 beds and the central space, each with two medicinal plants. Each division corresponded to the energetic peak of an organ of the human body, which follows a cycle⁽³⁰⁾ except the central space, which was adequate with two plants of the epithelial tissue. It is noteworthy that the choice of these plants was established based on three criteria: plants recognized by RDC No. 10/2010⁽³¹⁾, plants included in the National List of medicinal plants of interest to SUS (*Relação Nacional de Plantas Medicinais de Interesse ao SUS - Renisus*), and plants of common use among users, which could also be switched, according to studies and research.

The participation of the community during the whole process of construction and implementation of the medical clock is highlighted, together with the collaborators. The maintenance responsibilities of the garden are the responsibility of the HEI and the community, including replanting, irrigation and weeding processes, when necessary, with plants provided by the educational institution and some by the community itself.

Used plants, vital organs and traditional Chinese medicine

After the structuring of the beds, the planting of seedlings began, according to the guidance of MTC⁽³²⁾. In each site, the plants were identified by a doctor in Botany at UFSM, to avoid incidents related to incorrect use, concerning the similarity between species and denomination that the plant received. Thus, plaques were placed containing the popular and scientific name of the plant, as well as the family to which it belonged, so that each plant was individualized.

The use of medicinal plants allows the human being greater connectivity with the environment, accessing nature to help the body to normalize impaired physiological functions and can also assist in the restoration of weakened immunity, promoting, consequently, detoxification and rejuvenation⁽³²⁾.

The MTC, combined with the theory of the cosmic clock, points out that the human organism has a cycle of energetic circulation, in which the vital energy passes through the circuit in a determined way, daily following the same rhythm⁽³³⁾. The vital energy travels through the circuit at a pace, on a 24-hour route, starting at the lung meridian. After the passage of this vital energy through the liver, it returns to the lung and so on⁽³⁴⁾.

MTC considers that each agency has at least one corresponding plant with a peak action time⁽³³⁾. Its scholars⁽³⁴⁾ say that the plants mallow and licorice, macela and star anise / aniseed, *espinheira-santa* and ginger, garlic and Yacon potato, lemon balm and snakewood, artichoke and *melissa*, horsetail and *chapéu de couro*, *carqueja* and seed under leaf, dotted smartweed and soy, chamomile and milfoil, yarrow, dandelion and pennyroyal, mint and black Jack, marigold and rosemary, correspond to the respective organs: lung, large intestine, stomach, spleen and pancreas, heart, small intestine, bladder, kidneys, circulatory system, triple heater (digestive, respiratory and excretory systems), gallbladder, liver and epithelial tissue (in the center of the garden, being an adaptation).

Thus, in 24 hours, each of the 12 main meridians has a period of two hours in which their activity reaches its maximum peak of functioning. This means that, in treatment, the proper meridian time is the most suitable for the sedation of energy, which will result in restoring the organ or function⁽³³⁾.

For the construction of the medical clock, there were internal and external partnerships with HEIs. Among the internal partnerships, there was the participation of two nurse doctors and teachers, responsible for the project, a nurse linked to the Nursing Department, two biologists doctors and professors who helped in the identification of the plants, a landscape doctor and professor who provided bricks and organic material, as well as two academic scholarship holders in Nursing.

Among the partnerships external to the HEI, we can mention an agronomist from EMATER who helped in the donation of plants for the construction of the medical clock. It is worth highlighting the importance of the involvement and commitment of the entire local community in the construction, as well as the involvement of two scholarship students from high school who reside in it. The primary purpose of the project was to promote the cultural rescue of the use of medicinal plants and popular knowledge, with encouragement for their use, in addition to strengthening the link between the academy and the local community, which was present throughout the process of building a clock.

The authors of this report realized the relevance of interdisciplinary work, in view of being a more complete educational process and geared to the world of work. The conscious use of medicinal plants only brings benefits to the human being⁽³⁵⁾, therefore, it is up to the HEIs to propagate their use, scientifically improving popular knowledge, and this is what is expected with the development of this project.

The human body's medical clock and its contributions

The extension project that resulted in the construction of the medical clock provided opportunities for coexistence and strengthening of bonds between the community, health professionals and other areas of knowledge, undergraduate students and high school students. Besides, it is highlighted that the construction of the clock in the territory of the community allows the co-responsibility of the people who live there with the care and maintenance of their health since the medical clock of the human body was an opportunity to promote health, knowledge, and deepening concerning medicinal plants. These issues encompass the National Health Promotion Policy in several aspects, since, in addition to the use of public space, there is an expansion of the subjects' autonomy and favoring the preservation of the environment⁽²⁵⁾.

It is noteworthy that the visitation to the garden is open, as it is in a public space, however only the residents of the village use the plants. Besides, visits and activities were carried out with the community and schools in the municipality. As for the extension activities, they were developed by fellows of the Nursing course, who explained the clock, the human body, the plants and their contributions, that is, the effectiveness of the plant and the peak action times, as well as organized the space together with the community to receive visitors.

Among the positive points of the project is the incentive for the use of medicinal plants by the community and the engagement of the local population in the process of construction and implementation of the vegetable garden, promoting the health of the community⁽²⁵⁾. The medical clock is available for the population to know, learn and use⁽¹⁰⁾, strengthening the academic bond with the population and contributing to the training process of undergraduate students.

We found among the limitations, lack of approximation between the Family Health Strategy (*Estratégia de Saúde da Família - ESF*) and the project and the difficulty of access to the community, requiring transportation, which limited the participation of some schools due to financial difficulties.

As participants in this process, as professors and students, the importance of the project was realized, as the completion of each step allowed the apprehension of theoretical and practical knowledge about the construction and implementation of a medicinal garden, with different types of plants, providing subsidies for the reproduction of activities in other opportunities, both in personal and professional life. Research carried out with ethnic groups in Pakistan revealed that there is an interconnection of different knowledge in the use of medicinal plants⁽³⁶⁾.

The relevance of extension actions such as the one presented in the present study is understood, since there is a gap in knowledge, due to the few studies that specifically address the theme^(30,31,37).

Thus, the development of similar projects in the most varied scenarios is stimulated, from health services, schools, day-care centers, HEIs, communities and homes, aiming to expand the use of medicinal plants and disseminate this knowledge, promoting quality of life and health to population.

This rescue of the medicinal knowledge of plants for students and the community, in addition to promoting university - community integration was a seed planted so that this knowledge would not be lost. At the end of the experiment, it was possible to verify that the use of medicinal plants is accepted by the community. Thus, the complementation of popular and scientific knowledge about the production and use of medicinal plants is essential for their safety and effectiveness. The experience also made it possible to rediscover the importance of phytotherapy in teaching, research and extension, and the potential contributions it can provide to the science of Nursing, especially concerning health promotion and disease prevention.

CONCLUSION

The construction of the medicinal garden made it possible to rescue and enhance the use of medicinal plants, allowing the community to be guided about the cultivation and use of plants daily. Besides, the human body clock and medicinal plants enabled the development of activities to promote health and preserve the environment, in addition to the recognition of the human body, the identification, and the production of medicinal plants.

The activity provided an exchange of popular and scientific knowledge, reflection on the preservation of nature, recognition of the importance of biodiversity of flora present in southern Brazil. Also, the implementation of the vegetable garden strengthened the link between community and academy, bringing participants closer to basic concepts related to popular knowledge, popular medicine, medicinal plants, health, and the environment.

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We declare that the manuscript has no relationships that may imply potential conflicts of interest.

CONTRIBUTIONS

Marcio Rossato Badke contributed to the preparation and design of the study; the acquisition, analysis and interpretation of data; and the writing and / or revision of the manuscript. **Daiana Cristina Wickert, Gabriela Oliveira, Jordana Lima da Silva e Hentiele Feksa Lima** contributed to the acquisition, analysis and interpretation of data; and the writing and / or revision of the manuscript. **Maria Denise Schimith, Laís Mara Caetano da Silva e Silvana Bastos Cogo** contributed to the writing and / or revision of the manuscript.

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Mailing address:

Marcio Rossato Badke
Universidade Federal de Santa Maria - UFSM
Av. Roraima, 1000/ Cidade Universitária
Bairro: Camobi
CEP: 97105-900 - Santa Maria - RS - Brasil
E-mail: marciobadke@gmail.com

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