Path and implementation of interprofessional discipline in Health courses

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Introduction

Diagnoses of chronic diseases led to changes in healthcare in the last decades, in which patients require complex care from teams, establishing clear demands regarding interprofessional health collaboration[1].

According to the World Health Organization[2], interprofessional education is suggested by managers, health professionals, and educators as a means for collaboration and service provision in practical scenarios where students from different professions learn in a collaborative way.

Interprofessional education was defined as "occasions when two or more professions learn together with the objective of cultivating collaborative practice,"[3] aiming at developing attitudes, knowledge, skills, and behaviors towards a collaborative practice that, in turn, can improve clinical practice[4]. According to the Pan American Health Organization, it is necessary to "ensure the necessary human talent development to successfully put primary healthcare into practice in the incorporation of multidisciplinary teams."[5]

According to Reeves et al.[6], continuous education based in classrooms, simulation labs, and clinical or virtual settings has been increasingly offered in all health and social work sectors to undergraduate and postgraduate students. Evidence shows the necessary skills to work in teams in a collaborative way are not intuitive and learned by working.

The following are among the axes that need to be prioritized in education policies and for the advancement of integrated health: mechanisms related to the educator, such as professional qualification and institutional support; mechanisms related to curricular models that change the logistics, schedule, and syllabus in contextual learning; and assessment models[2]. Along these lines, Rudland[7] suggested that interprofessional education "be incorporated among the specific activities of each discipline and of the curriculum" (p. 448-55).

The theories that support the social dimensions of learning and interprofessional education belong to the theoretical framework that guides interprofessional education. Share capital theory is used to describe, understand, and measure the advantages of the individuals who belong to a social network[8].

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Hammick et al.[9] acknowledge that any attempt to write about interprofessional education theories must be careful not to exclude theories that help understand collaborative practices, since it is not possible to separate the inseparable. Theories should expand the understanding of interprofessional education, since it is a rather neglected subject.

In 2003, Carpenter[10] mentioned that theories of social constructivism and share capital in interprofessional education cannot be achieved through professional or social isolation. Consequently, the theory of contact emerged, where interprofessional education brings students from different professional groups together in scenarios of teaching and learning. Therefore, these exchanges of information and knowledge collectively provide growth for these groups.

For Sociology, interprofessional education enables social construction of knowledge, i.e. it is developed, coded, and transferred through social processes and organizations, including professional curricula, professional regulation, and higher education institutions[9].

Under the perspective of the theory of complexity, the objective is to overcome the idea that reality is linear and stable, understanding it as a system comprised of several components or dimensions that interact among each other. The main characteristic of complex systems is that the whole has properties that cannot be inferred based on its individual parts[11]. This does not guarantee stability or certainties – phenomena can have chaotic and unpredictable behaviors; complex systems are sensitive to change and understood as open systems; the observer is part of the system; and these systems interact and go through environmental influences[12].

The 2001 and 2014 National Curricular Guidelines (DCN) indicate the challenge of a more qualified practice-oriented education to address subjects, their families, and the community in their socioeconomic and cultural context, respecting values, habits, and behaviors, and this requires changes in teaching practice. The DCN of undergraduate health courses suggests three broad areas: healthcare, health management, and health education. In health management, the following processes, among others, must be taken into account: teaching and learning, interprofessional learning, mobility, and networking[13].

In health professions, significant changes have been occurring, not only due to the DCN but also to public policies of promotion and prevention, particularly the healthcare networks[14].

Batista[15] mentioned that, in Brazil, interprofessional education is presented as the main strategy to educate professionals capable of working in teams, which is an essential practice for comprehensive healthcare.

In this national context, strengthening integration among education, service and community, and the experiences from National Reorientation Program in Professional Health Education (Pró-Saúde) and Program of Education through Work for the Area of Health (PET-Saúde) provided an opportunity to create curricular components. These components aim to educate scholars for interprofessional practices, teamwork, collaboration to strengthen the care network and participation in an education that is more adequate to the population's needs.

PET-Saúde was a joint initiative between the Brazilian Ministries of Health and of Education established by Interministerial Directive[16] no. 421, of March 3, 2010, to foster tutorial learning groups in strategic areas of the public health service. It is an instrument of qualification for health professionals, and of introduction to work and education of undergraduate health students, with the perspective of care qualification and introduction of the service needs as a source of knowledge and research production in education institutions[17].

When approaching health education, the authors build PET-Saúde's path based on four analytical axes: historical roots, exploring its origins; learning more about Pró-Saúde and PET-Saúde's paths; education-service integration as a structuring idea; desire for change in practices of integration and interprofessional learning.[18,19]

In the event "Construction of an interdisciplinary health praxis" held in 2009 at UEM, students, workers in the health services network and the university's teachers/tutors indicated that one of the most serious issues was the dissonance between academic education and the actual health needs of the population and of the service. The "Maringá Letter," written based on this event, supported integration initiatives of health courses.

At UEM, PET-Saúde was launched in 2009 with the following theme: "UEM PET-Saúde: Strengthening primary care in Maringá - PR." It aims to foster integration between students and professionals who work in primary care in the following courses: Physical Education, Nursing, Dentistry, Medicine, Psychology, Pharmacology, and Biomedicine.

Supporting this proposal resulted in perspective of changes, since it was idealized in a student-centered, competence-oriented, horizontal interprofessional model, reinforcing the concepts of horizontality and interdisciplinarity. According to the World Health Organization, one of the main justifications for introducing interprofessionality in undergraduate courses is as follows: collaborative practice can improve access to health services and their organization; adequate use of specialized clinical resources; health results in users with chronic diseases; assistance and safety of patients;[2] optimization and rationalization of resources to be used in health systems[9].

Health courses have discipline-structured, hierarchized, vertical, teacher-centered curricula. The movement of change is justified by the search for education in undergraduate courses and by the need to participate with Brazilian National Health System (SUS) in the creation of institutional and personal bonds through a direct action where students can actually see the creation of perspectives of solution to the most important issues and of the daily practice of health teams provided by interprofessional practice.

In spite of having excelled in the qualifying rankings of the Brazilian Ministry of Health (MEC), the courses have theoretical basis that follow the DCN regarding the profile of graduates, and their skills and competencies. However, maintenance of disciplinary structures, formation of strict matrices, and lack of interdisciplinarity compromise the model. It becomes centered in the teacher and clinical areas with a specialized, hospital-centered profile, particularly Medicine. In Medicine, there were only a few actions that aimed to enable the use of methodologies or techniques of teaching and learning that could change this model. Attempts to introduce the study of issues or learning through teams or groups were punctual and for a short period of time.

The Physical Education course, in turn, does not prioritize the promotion of health. The Pharmacology and Biomedicine courses have a technical profile. Their education is aimed at the market, with few innovative curricular interventions.

The Psychology course is not linked to the Center of Health Sciences, and this, by itself, complicates joint health strategies. The Dentistry and Nursing courses have Collective Health disciplines in their first stages, with introduction to the health system still with a specific education bias.

Active methodology practices have been gaining ground in Nursing. Multiprofessional and medical residencies have become a motivation for careers related to education and services in the seven courses mentioned above.

Both the DCN and PET-Saúde enabled the occurrence of paradigm shifts, connecting the possibility of consolidation of a graduate's profile with reality, with a critical, reflective perspective, and strengthening the concept of citizenship.

This work aims to describe UEM's experience in implementing curricular changes in health courses, creating disciplines that work in primary health care. These changes occurred after the implementation of PET-Saúde projects, promoting interprofessional education and collaborative practices.

Methodological approach

Work process

Supported by the Office of the Vice-Provost for Education, the respective course academic councils, and the Municipal Health Department, the creation of those disciplines involved the participation of teachers, PET-Saúde tutors, students, health service preceptors, and Maringá's city management from 2012 to 2014. They aimed to put PET-Saúde Program's notice into practice reorienting professional education at UEM.

Thereafter, fortnightly meetings were conducted to determine the pedagogical guidance, and teaching and learning methodology that delineated the implementation process. Furthermore, health course coordinators (or their representatives), along with PET-Saúde students, participated in dynamic simulation activities applying the methodology.

Teachers interested in becoming tutors of the new curricular components/disciplines were sensitized in different moments: while attending design meetings and disseminating/communicating the results achieved by PET-Saúde groups, as well as through tutorial modules of teacher development.

These curricular components/disciplines became part of the Course's Pedagogical Project of each one of the seven courses after being approved in several administrative and deliberative levels. For the creation of new curricular components, it was necessary to leave common free timeslots to all seven health courses to enable enrollment and formation of interprofessional classes. It was also necessary to redistribute the workload of busy teachers in nine departments without hiring new people – only by reorganizing the faculty workload.

The last step involved four 12-hour workshops with 28 teachers and 22 preceptors of the municipal health network. The following topics were consolidated: objectives, methodology concepts, discussion and creation of a mental map of the disciplines (Figure 1), assessment processes, and creation of two tutorials (Chart 1) to be used as a structure guide of activities in interprofessional classes. Initially, 430 students were organized into 40 classes matrixed by the Medicine course, which has the smallest number of enrolled students by term.
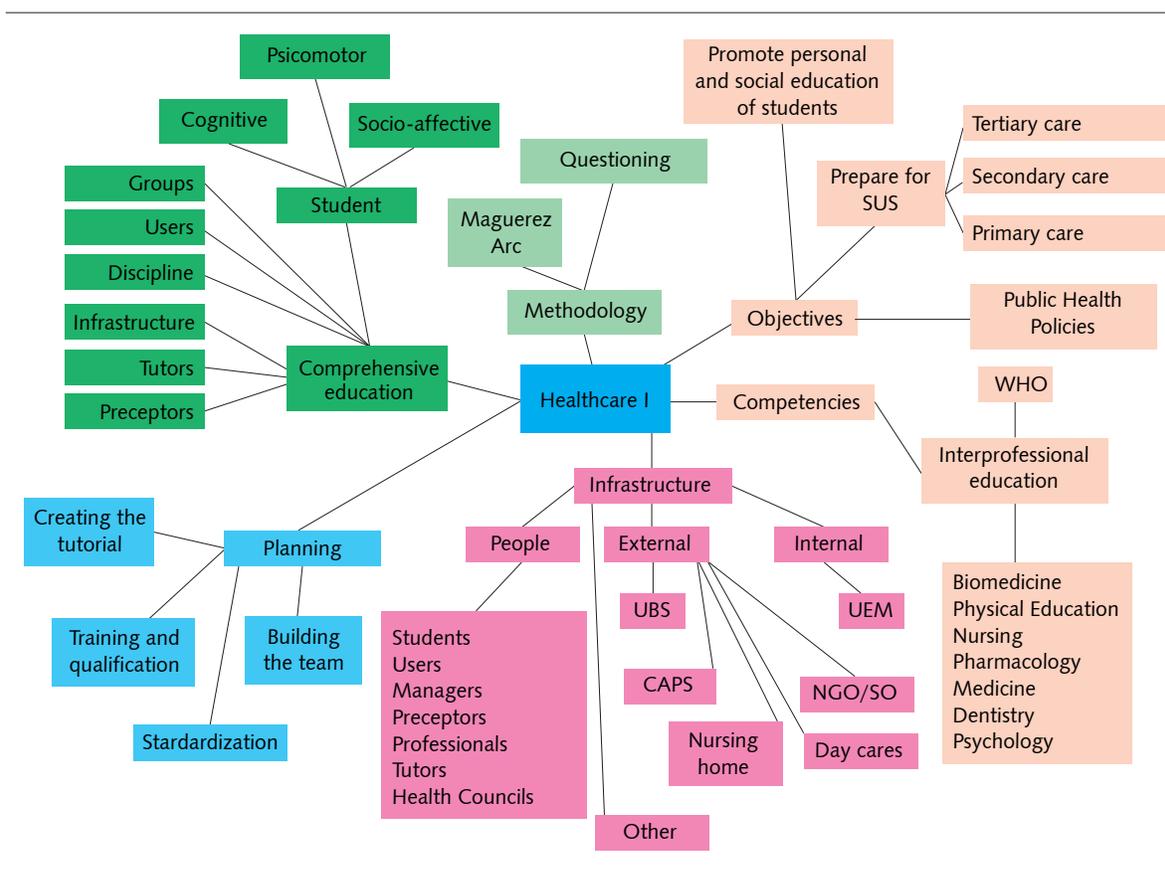

Figure 1. Healthcare I mental map

Chart 1. Example of a sequence of activities of the Healthcare I activities

WEEK 3 – Date: __/__/__				Instructions to the teacher
Objectives	At the end of the class, students should be able to: acknowledge the territory and identify available points of healthcare; explain the actions and services conducted at the UBS and other entities that comprise SUS primary care network; show the infrastructure and the organization model of an UBS.			Visit the territory. Ask students to individually take notes and/or pictures of points that show the local reality, such as schools, associations, street conditions, water and sewage networks, leisure areas, parks, public squares, street markets, housing details, people moving around, among others. Ask students to individually take notes of unknown words, terms, acronyms, and expressions. Encourage students to list unknown words, terms, and expressions. Determine the main questions (doubts) that require individual study. Attention! Some questions need to be pointed out by the teacher, should they not be spontaneously brought up: - Territory, area/micro-area, and points of healthcare. Guide the creation of individual narratives: individually take notes of reflections about scenarios.
Time	Place	Activity	Description	
1:30-2:30 p.m.	UBS	Group discussion/ Assessment	Discuss the infrastructure and organization of UBSs	
2:30-3:30 p.m.	UBS	Observation of reality	Acknowledge the territory/Territorialization	
3:30-4:30 p.m.	UBS	Observation of reality	Acknowledge the territory/Territorialization	
4:30-5:30 p.m.	UBS	Group discussion	Identify the key points and raise questions that guide the study Assess learning	

Structure of the disciplines

The curricular components Healthcare I and II were introduced in the curricular matrix in the second half of the first year and in the first half of the second year of the courses. They were taught in the same day of the week and time, with workloads of 34 and 68 weekly hours, respectively.

The Healthcare I discipline was planned with the objective of preparing students for collaborative practice through learning in an interprofessional team, developing competencies to do so. In the Healthcare II discipline, collaborative practice occurs when several health professionals with different experiences work with users towards creating and applying an intervention project that can involve patients, families, caregivers, and the community.

Objectives

The Healthcare I discipline was created under the perspective of a teaching and learning model that aims at interprofessional education and education in collaborative practices, integrating education and extension activities through an active questioning methodology based on the *Maguerez Arc*[20]. It is an activity of interaction between education and the community, aimed to guide and help health students in their personal, social, and professional education. It contributes to their growth as ethical citizens committed to human health and wellbeing.

The specific objectives of the Healthcare I discipline are as follows: understand the organization, guidelines, and principles of SUS; explain the actions and services provided by Primary Care Unit (UBS) and other entities that are part of SUS; identify primary care models and user-centered actions to promote health; understand the contributions of different health professions to primary care activities; understand the application of concepts of interprofessional education and collaborative practices in activities of education and promotion of health, prevention of diseases, and improvement of life quality; establish a healthy co-existence in activities in multiprofessional teams, respecting differences among all involved professions; show a proactive, ethical, respectful, and affective behavior when interacting with the team, individuals, and the community.

Therefore, students develop, in the first year, the ability to advocate for health promotion, prevention, and rehabilitation, aiming at the collective dimension of the problem and considering it as a whole, as well as its psychosocial dimensions.

The Healthcare II discipline has the following objectives: work in interprofessional health teams in a critical, reflective, and human way, respecting differences among the involved professions and the community's needs; learn about the activities developed in health service and understand how it works; show points of health support and care available in the community; communicate and interact with the community and the health team respecting each individual's and the group's limits and potentials; analyze the issues observed in the community and design an intervention project with interprofessional view based on shared decisions; take healthcare actions aimed at transforming the community; participate in the social health control valuing the health education of professionals.

In this discipline, the most important activity – the one that interfaces with health service – is the design and execution of an intervention project, idealizing and discussing its theme with the team.

Methodology

In questioning, the Maguerez Arc (Figure 2) is based on the observation of reality, after analysis, raising hypothesis, creating proposals, and discussing solutions for the themes and issues that were found[20].

Student education overcomes the limits of intellectual ability. The decisions made in an interprofessional way should be applied or forwarded always considering their potential application to reality in the field of activity of a health team with integrated and collaborative view.
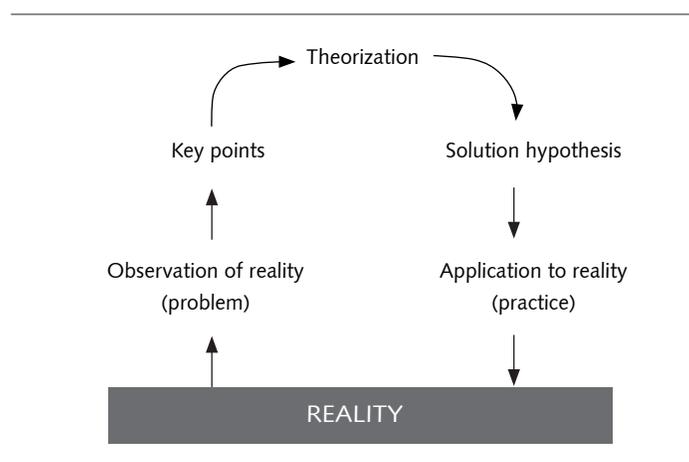

Figure 2. The Maguerez Arc (Source: Bordanave, 2001)

The small group

The small group was designed similarly to the ones that are formed when people share the same environment, have common objectives, and collectively work to achieve them, setting goals and strategies, and focusing on accomplishing tasks. In this context, participants play roles, resulting in a diversified view and critical performance in real-world situations, as well as a collective construction of (dis)alienating attitudes. This means that, even in the same environment, decisions are made taking differences into account and through willingness to work in groups[21].

The description of the "roles" developed by each individual is documented in Pichon-Rivière[22], particularly when it "reports dormant content of groupality." However, at first, Bion studies were the ones that brought the group culture to light. They considered the existing conflicts between the group mindset and the individual desires, asserting there may be a "catastrophic change" when new ideas promote a disruption in the prevailing group's mindset to constitute a new truth[23].

Bastos[24] described the operating groups focused on health promotion, which are a possibility of intervention in different learning processes. Finally, Pichon-Rivière[25] state that the content that will be expressed by the group's spokesperson is born in the confluence of the individual and collective experiences[26].

The assessment process

The assessment system consistent with a proposal of an active learning methodology is aimed to measure competencies in the cognitive, psychomotor, and affective axes in an articulate, continuous, and systematic way, correlating and integrating itself with all variables involved in the process of teaching and learning[27].

In small groups, assessment is carried out in every meeting, where students are evaluated through predetermined criteria. The assessment model of the Healthcare I module is based on a comprehensive model and is distributed according to Chart 2.

Chart 2. Percentage distribution of assessments of the Healthcare I discipline (*own instruments)

Assessment domain	Strategy	Percentage
Cognitive	Assessment by portfolio	40%
Psychomotor	Psychomotor assessment*	30%
Socio-affective	Socio-affective assessment*	20%
	Peer assessment*	10%
	Self-assessment*	---

The individually developed work helps to highlight the competencies developed by each student. Its objective is to encourage reflection, as well as set goals and objectives. This is registered in a portfolio comprised of a collection of several (textual or non-textual) documents. This portfolio shows the development and progress in learning, detailing relevant efforts made by students to achieve the objectives set in the discipline's tutorial[28].

The development of skills and practical aspects related to the education of students, such as active observation, collaborative participation, analysis, compliance with standards, proper communication, professional procedures and techniques, leadership, search for information, critical literature assessment, and professional reasoning, is related to the psychomotor assessment.

The socio-affective assessment is based on the observation of points, such as the ability to identify and deal with one's own or another inidividual's feelings; ability to listen, observe, and use proper language; respect, behavior, attitudes, ethics, assiduity, punctuality, commitment, and interpersonal participation, with weekly feedback to students at the end of each meeting.

Students assess their peers in every meeting with criteria that are similar to the ones used by the tutor in the psychomotor and socio-affective assessments, but according to their point of view.

Self-assessment is an important learning strategy that prepares students to rethink the results of their own professional actions, reflect on what they have learned, measure how this learning contributed to their professional education, perceive their individual learning needs, design a plan

to help them deal with their difficulties, reflect on their personal and social growth, and review and update their education planning[27].

Results and discussion

The first aspect to discuss is the importance of innovation to students of different courses in the same regular activity. It is the fundamental basis for interprofessional education and collaborative practices. The students' search for their own intrinsic professional identity and the possibility of identifying another individual as a future coworker bring less-frequent reflections to the first activities of these disciplines in health courses.

Among the different ways of analyzing and classifying this practice's typology, D'Amour et al.[29] describe models focused on four dimensions: objectives and consensually-shared view, focused on promoting user-centered practice; internalization for mutual recognition and respect; governance related to cooperation and leadership for interprofessional integration and health services; and formalization/agreement on responsibilities and shared negotiation. The theoretical debate about the sociology of professions is oriented towards two directions: the authors try to indicate the elements or attributes of what they consider to be professions or focus on the discussion of the so-called professionalization process[30].

Hamilton[31] suggests that, when developing values, attitudes, and skills consistent with a culturally-competent profession, students can simultaneously develop, through interprofessional education, an ability to apply the same skills and attributes to their relationships with students and future colleagues of other health professions. This disseminates shared values and discourages the creation of interprofessional barriers. If, on the one hand, cultural competence prevents ethnocentrism, on the other, it counteracts the teacher-centered model.

According to Feldman[32], teachers in their work environment deal with plenty of issues: ethical, affective, ideological or cultural ones. Mutual collaboration can recreate the knowledge required for an inclusive practice that respects multiculturalism, values, genders, and social class origin.

Challenges in promoting paradigmatic curricular changes, such as the one carried out by the Healthcare II and II disciplines, involve great institutional effort to mobilize coordinators of academic councils and departments. This is due to the fact that changes interfere in the pedagogical projects of the courses and need to be reasoned and broadly discussed among all categories.

In order to work in disciplines, workshops for the development of teachers' questioning power were carried out with the technique of operating groups. According to Cosme[33], moments of "reinventing faculty work" require more than change from instructors or facilitators, but the creation of a qualified interlocutor in the teaching and learning process.

This cultural and methodological difficulty is reported by Visser[34], in 2017, highlighting that these barriers require new studies for better comprehension. However, the emphasis on interpersonal skills as a fundamental characteristic of a successful interprofessional work must logically imply that students also have opportunities of interacting face to face with other students and professionals[35]. This has also become a great challenge in the implementation of the discipline, due to the diverse characteristics and views of tutors, preceptors, and students.

In the search for improvement of teachers and preceptors, there are educational courses in Brazil focused on teaching and learning methodologies, and on articulation with managers in different levels and with education institutions[36]. Although UEM took part in these actions, in the last few years, it did not have a teacher development policy to foster an approach to active methodologies. Unfortunately, it still has a specialist-biased, hegemonic education model that is far from the practical reality of health services, especially in primary healthcare.

Among the difficulties faced by innovative curricula, Batista[37] mentions the challenge of inserting teachers into these processes, and gives particular emphasis to "the practically intangible professionalization of teachers in Medicine courses," a frequent issue.

According to Morin, there is an increasingly larger, deeper, more serious inadequacy among our disjoint, broken, and compartmentalized knowledge among disciplines. On the other hand, there are increasingly more polydisciplinary, transversal, multidimensional, transactional, global, and planetary realities or issues[38].

The syllabus of the curricular components Healthcare I and II include knowledge and insertion into SUS and its interfaces. Their objectives include knowledge of the current models of the healthcare network, aiming to understand how SUS works in a real-world education scenario, strengthening the bond and learning about the reality of professional practice in a broad and reflective perspective. Paulo Freire agrees with this approach and acknowledges the human being as a permanent construction and production of knowledge resulting from their relationship with the world, i.e. of questioning their existence[21].

The strategy used since the beginning of the courses to present health services with preceptors from the services network helped students understand that teams that use collaborative practices are more dedicated to promoting improvement in care and safety of patients. The use of collaborative practices maximizes the resources applied in the health system, move emergencies to primary healthcare, and encourage integrated work.

The participation of professionals from health units was essential to supporting tutors and students in local scenarios. Since they helped create the discipline tutorial, they were able to collaborate and improve discussions, as well as approach the group with activities and demands from the local health service as an attempt to show the complexity of the system and of the relationship between the team and the population.

Based on the exercise of thought and of critical action that are inherent to the ethical and political project of health systems, collaborative group work lead to production of individual and collective knowledge related to the introduction of concrete changes in institutional work spaces. This awareness is also described by Reeves[6] when addressing attitudes, knowledge, and skills in interprofessional education.

The difficulties in curricular changes described by Cyrino[39] refer to proposals that involve collective health areas, which are counter-hegemonic when compared to technical models and fragments based on impersonality. The Healthcare I and II disciplines face this type of questioning from students and teachers, because they suggest a critical, reflective model in small groups with criteria-based assessment. According to these characteristics, the suggested innovation provided a peculiar moment to the education of students and the development of teachers. This moment is measured in the assessment of terms that concluded their modules and in periodical meetings with involved teachers and preceptors.

Since the beginning of the implementation of disciplines, aspects of the construction and of the obtained results were shared on a chapter in the book *Educação Baseada na Comunidade*, published by OPAS (2014), and in scientific events, among which the following are highlighted. In 2014, Network: Fortaleza; Brazilian Conference of Medical Education (COBEM), Joinville; Brazilian Conference of Pharmacological Education. In 2015, workshops in COBEM, in Rio de Janeiro. In 2016, Interprofessional Workshop in COBEM, in Brasília; Health Conference of the State of Paraná; and Interprofessional Work in Primary Care workshops, which trained 120 SUS workers.

Promotion of integration among teachers resulted in specific educational projects in several courses at UEM and in the creation of a doctoral research line of one of the authors.

Final remarks

This study highlights the importance of the development of undergraduate and postgraduate researches that foster integration between higher education institutions and services, resulting in the production of knowledge according to local and regional health needs.

It is also important to promote methodological changes to the presentation of content, and integration of theory/practice into the care network, involving people, families, the community, and services.

Based on the characteristics of UEM's traditional curricula, integration of the primary and clinical cycles in undergraduate courses was encouraged, as well as the interdisciplinary and collaborative resolution of healthcare and health education issues. This allows for integration between the university and health services, which work together towards permanent education of professionals. This knowledge essentially contributes to the community's wellbeing.

Finally, it is important to seek knowledge through interprofessional education, considering that students must be prepared to work under the perspective of an interprofessional education in the future.

open space

Authors' contributions

Arpini EA is the main author of this manuscript, whose theme is part of his doctoral thesis. He coordinated the participation of the co-authors, produced and revised the manuscript in all its versions, and approved its final version. Albiero ALM participated in the discussion of the results, review and production of the manuscript, and approved its final version. Alves RN participated in the review and approved the manuscript's final version. Bicudo AM is the supervisor of the main author's doctoral thesis, participated in the discussions of the results and approved the manuscript's final version.

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In interprofessional education, two or more health professions learn with each other, improving attitudes, knowledge, skills, and behaviors for collaborative practice. At Universidade Estadual do Maringá (UEM), the curricula of health courses have hierarchical and teacher-centered disciplines. Changes are justified aiming at a complete education. This paper describes the creation of primary care disciplines. Curricular components Healthcare I and II were introduced in the curricular matrix. The *Maguerez Arc* was used in the activities as an active methodology, as well an assessment system comprised of cognitive, psychomotor, and affective axes, which are articulate, continuous, and systematic. It is concluded that interprofessional education can be an integration between university and health services, working towards training the students so that knowledge essentially contributes to the community's wellbeing.

Keywords: Interprofessional education. Curriculum. Active methodologies.