

# The Nourish Program: An Innovative Model for Cooking, Gardening, and Clinical Care Skill Enhancement for Dietetics Students

**R**EGISTERED DIETITIAN NUTRITIONISTS (RDNs) play a critical role in the continuum of chronic disease care as the population faces an ongoing obesity epidemic, and adherence to dietary recommendations remains low.<sup>1-3</sup> Diet has independent effects on diabetes, cancer, and cardiovascular disease, three major causes of death in the United States.<sup>4,5</sup> Diet is a vital part of a healthful lifestyle and may impact quality of life through its effect on energy balance and weight management.<sup>3</sup> According to the Academy of Nutrition and Dietetics, primary prevention is the most effective and affordable method to prevent chronic disease, and dietary interventions positively impact health outcomes across the lifespan.<sup>5</sup>

Community-based programming to prevent chronic disease and promote a

healthful lifestyle though the use of gardens, cooking classes, farmers markets, sustainable farming practices, and community-supported agriculture has gained popularity in recent decades.<sup>6-8</sup> Federal programs have further supported this effort with “farm to school” and “farm to work” grant funding from the United States Department of Agriculture.<sup>9,10</sup> Home gardening, cooking, and sustainable food systems education are not currently part of the formal dietetic curricula, meaning new dietitians are entering a landscape of holistic, farm-to-table, community-based programs but are not necessarily trained in basic cooking or gardening skills.

Current requirements to become an RDN include completion of a bachelor's degree from an Accreditation Council for Education in Nutrition and Dietetics (ACEND)-accredited didactic dietetics program. However, the minimum education requirements are moving to a master's degree by 2024.<sup>11</sup> In addition, a student also must match to an ACEND-accredited dietetic internship, in which a minimum of 1,200 hours of supervised practice are required before qualifying to sit for the RDN examination. RDNs need to maintain 55 professional competencies that span 14 broad spheres of practice, identified through 352 performance indicators.<sup>12</sup>

In addition to the rigor of current programs, dietitians face new challenges as chronic disease outpaces acute illness in the population.<sup>2</sup> Availability of internship rotation sites and preceptors are limited, despite the increase in demand for dietitians in both clinic and community settings. More training opportunities are needed within dietetic internship programs to better prepare students to meet basic competencies, as well as expand their breadth of training to include clinic and community-based chronic disease prevention efforts.<sup>11,12</sup>

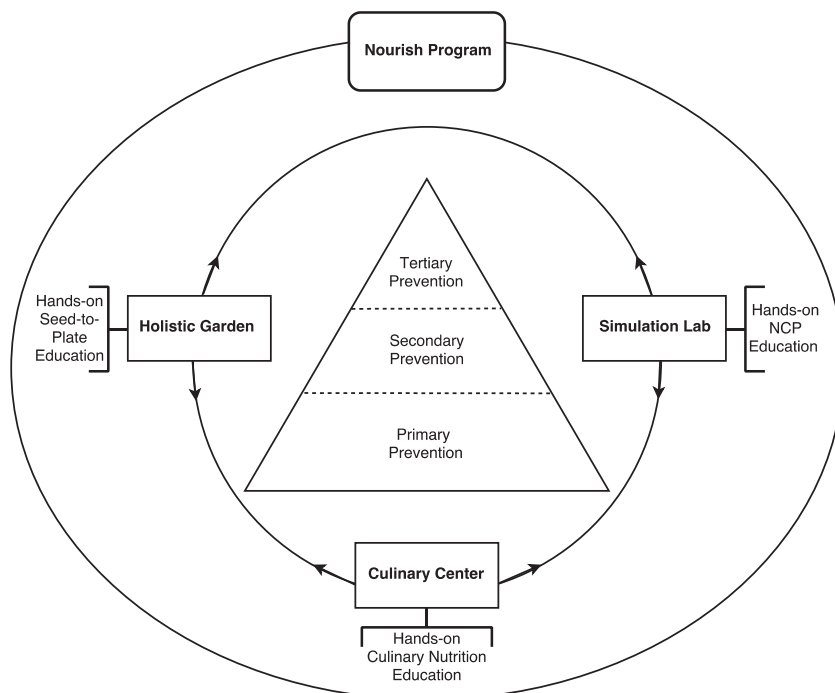
The Nourish Program was developed as an adjunct to the dietetic internship program at the University of Texas Health Science Center at Houston (UTHealth) School of Public Health (SPH). The UTHealth SPH dietetic program is a 2-year combined graduate degree/dietetic internship program accepting up to 12 students per class (24 first and second year combined) and includes community-based nutrition education skill development, clinical nutrition, and foodservice experience. The Nourish Program provides in-house training opportunities for the 24 dietetic interns that complete supervised practice hours while also obtaining graduate degrees in public health. This article describes the goals, development, and early implementation of Nourish Program objectives to improve the dietetic internship experience. Challenges and future directions are also discussed.

## DESIGNING THE NOURISH PROGRAM

The goal of the Nourish Program is to be a nutrition education hub, envisioning a ‘seed to plate to prevention’ approach. The Nourish Program was initiated in 2016 through a generous donor endowment, matched by the university, with additional funding from the UTHealth SPH, the Michael & Susan Dell Center for Healthy Living, program revenue, and grants. The primary use of the Nourish Program is dietetic student education at the UTHealth SPH. The location of the Nourish Program facilities within the Texas Medical Center allows expansion of the program to other health care students, including medical, dental, and nursing. Nourish Program classes and facilities are also used for continuing education for dietitians and physicians, as well as community-based intervention programs and research studies.

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**Figure 1.** The Nourish Program continuum of care: Scheme depicting Nourish Program elements, including the simulation lab, holistic garden, and culinary center. Nourish uses case studies for teaching students about specific nutritional disorders, including malnutrition. These case studies are presented in the simulation lab, with case solutions incorporating culinary arts using produce from the holistic garden. The intertwining program elements reach across the continuum of care, including all levels of prevention and treatment.

### Nourish Program Components

The three main initiatives of the Nourish Program include: 1) a holistic

garden, 2) a culinary research and demonstration kitchen, and 3) a simulation lab. These initiatives function

both independently and collectively to support the UTSPH dietetic internship program experience. The program elements span all aspects of prevention (primary, secondary, and tertiary), which is especially relevant to modern RDs working with chronic diseases (Figure 1). In addition, this model provides a systems-level approach<sup>13,14</sup> integrating aspects of the food system and culinary arts, alongside traditional dietetics practice.

### Holistic Garden

In an effort to address the gap in current dietetic training regarding the linkages between food sourcing, sustainability, and disease prevention,<sup>15</sup> a holistic garden spanning 3,600 square feet was constructed on the UTSPH campus (Figure 2). The garden is publicly accessible and viewable from main student walkways to encourage engagement with the wider UTHealth and Texas Medical Center community. The holistic garden maintains a seasonal rotation of herbs, vegetables, and fruits. As part of their training across 2 years, dietetic interns learn gardening techniques from a specialized horticulturist faculty member. Interns participate in the overall care of the garden, including yield studies, crop rotation, scheduling, harvesting, and garden-based community nutrition education. Dietetic interns also attend weekly volunteer garden workshops that cover topics such as organic planting, weeding, fertilization, and pest control, as well as novel methods to promote sustainable agriculture and food security. Produce from the holistic garden is harvested by student managers and volunteers and then prepared in the demonstration kitchen. These seed-to-plate programs include formal dietetic, public health, and medical school courses as well as community classes, workshops, and seminars, using strategies derived from behavioral theory. Kitchen scraps are used for stocks and sauces, and compost is used as garden fertilizer.

### Culinary Research and Demonstration Kitchen

The culinary research and demonstration kitchen was developed to supplement the dietetic training program, with a laboratory to teach basic



**Figure 2.** The holistic garden is a 3,600-square-foot garden on the University of Texas Health Science Center at Houston School of Public Health campus, which maintains a seasonal rotation of herbs, vegetables, and fruits, and where dietetics interns learn gardening techniques from a specialized horticulturist faculty member.





**Figure 3.** The research and demonstration kitchen, where dietetics interns are taught cooking skills such as reading and deciphering recipes; basic knife skills; protein, vegetable, grain, and pasta cookery; and preparation of sauces and stocks, as well as development and presentation of recipe demonstrations to peers, to practice skills for teaching healthy cooking classes to patient populations.

cooking skill courses (Figure 3). Standard approaches for facilitating cooking education in community settings are also taught. The academic teaching kitchen is outfitted with a range of equipment, including several burners, ovens, steam tables, blenders, and tools

so multiple groups of students can be cooking at the same time. The kitchen also contains large-screen monitors to ensure a clear view of preparation techniques during demonstrations. Classes can be accessed remotely through a combination of controller-

operated cameras and network systems, allowing for off-site training. Essential culinary skills taught to dietetics interns include: reading and writing recipes; food safety skills; basic knife skills; protein, vegetable, grain, and pasta cookery; as well as preparation of sauces and stocks. As part of their coursework, dietetics interns are required to develop and present recipe demonstrations to their peers, to practice skills for teaching healthy cooking classes to patient populations. Produce from the holistic garden is used during cooking classes, allowing faculty and students to model seed-to-plate nutrition education for disease prevention. Interns are also taught to promote healthy eating and culinary arts through engagement in social media with posts, photos, and food videos on platforms such as Facebook, Twitter, and Instagram. Additional classes for students focus on skills that are necessary for the current food environment and trends, including instructions on writing blogs and food photography.

### Simulation Lab

Malnutrition is not uncommon among patients during and directly after hospitalization, and it is associated with poorer outcomes and increased costs.<sup>16</sup> This makes the identification and treatment of malnutrition a priority for clinic-based RDNs. The Nutrition-Focused Physical Assessment (NFPAT) is a full physical examination of a patient's functions and appearance and is considered the best assessment for the identification of malnutrition.<sup>17</sup> Clinical nutrition assessments now require the NFPAT; however, hands-on practice giving physical assessments is not always available early in dietetics training.<sup>2,18,19</sup>

The simulation lab allows students to gain patient care experience, including conducting NFPATs, in a realistic practice environment as part of their medical nutrition therapy coursework before entering clinic rotations. The laboratory is modeled as a modern hospital room and is equipped with high-fidelity mannequin-based simulations (Figure 4). The mannequin maintains pulse points, heartbeats, breathing, chest movements, eye dilation, and common malnutrition markers, and a monitor alongside the



**Figure 4.** The simulation lab allows students to gain patient care experience in a realistic practice environment as part of their medical nutrition therapy coursework before entering clinic rotations. The lab is modeled as a modern hospital room and is equipped with high-fidelity mannequin-based simulations, which replicate a variety of nutrition-related chronic and acute conditions, including malnutrition.

mannequin displays these vital signs in real time. The mannequin also replicates a variety of nutrition-related chronic and acute conditions, including malnutrition. The mannequin can be gender-specific, taking male and female forms as pertain to the case studies. As part of dietetics internship training, students practice NFPATs and other case studies on the mannequin simulator, which are video recorded and reviewed by faculty and students. These recordings allow faculty to evaluate student performance and allow students to gain more detailed perspectives on patient interactions. Through the simulation lab, interns gain hands-on experiential learning in medical nutrition therapy, bedside manner, and NFPAT.

In summary, the Nourish Program provides skill development in clinical care, gardening and food systems, and culinary arts for dietetics interns, RDNs, and other health care students and professionals. Moreover, standardization of these skills allows dietetics interns to visit rotation sites with greater experience and confidence, which improves achievement of dietetics training competencies. Furthermore, the Nourish Program serves as an additional internship site for community and food service rotation hours and creates multiple avenues for collaboration with other Texas Medical Center schools and external universities. For example, culinary medicine classes conducted in collaboration with the Goldring Center for Culinary Medicine at Tulane University are taught to students at the UTHealth McGovern Medical School, with assistance from the dietetics interns. These classes promote interprofessional education as well as encourage medical students to learn about nutrition and to encourage the incorporation of RDN referrals for further medical nutrition therapy or counseling.

## CHALLENGES AND FUTURE DIRECTIONS

The Nourish Program provides state-of-the-art opportunities for dietetics interns to develop skills in the areas of gardening/food systems, culinary medicine, and medical nutrition therapy, thus improving workforce readiness. A diverse faculty consisting of

dietitians, horticulturists, and trained chefs collaborate in providing these experiences to the interns. These strengths notwithstanding, the Nourish Program has faced several challenges during the initial development phase, including funding and staffing. Recruitment of specialized staff, trained in culinary arts or horticulture, as well as dietetics, is challenging because of the limited pool of specialists in this emerging field. Sustainability of the program components is also a challenge, because the resources require significant personnel time. To address these needs, volunteers are recruited to fill in the gaps of maintaining the garden and managing the kitchen space. Ongoing support for facility maintenance, developing standardized curricula including practice opportunities for dietetics interns, and integrating these curricula into the dietetics internship program as required coursework are also key to the long-term success of the Nourish Program. A business plan is in place, in which revenue from additional course offerings and continuing education classes has been explored as a means of continued funding.

Ongoing and future efforts of the Nourish Program focus on the continued development of culinary, garden/food systems, and simulation programs and classes, both for dietetics interns and the wider UTHealth community. Integral to this expansion is the ongoing evaluation and quality improvement of current and future programming that is currently being developed. Short-term dietetic student program evaluations include student and faculty surveys assessing satisfaction and knowledge acquisition. Medium-term outcomes of interest include student knowledge, skills, workforce readiness, behavior change, and improved performance at supervised practice rotations. Longer-term evaluation outcomes include professional performance and employer satisfaction. Finally, the Nourish Program allows for development of research projects and educational materials involving the food system and current culinary trends, as well as clinical care.

This report has described the development, implementation, and future directions of the UTHealth SPH Nourish

Program. This program sets a foundation to expose dietetics interns and other health science students and professionals to a broader public health view of food systems and agriculture. Programs such as this not only enhance the experiential component of dietetics education but further prepare dietetics interns for systems-level thinking and integrated practice, as well as innovative job opportunities in a changing dietetics landscape.

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## STATEMENT OF POTENTIAL CONFLICT OF INTEREST

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