

# Addressing Agricultural Issues in Health Care Education: An Occupational Therapy Curriculum Program Description

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**ABSTRACT:** *Context:* Medical and allied health professionals who work in agricultural states frequently address the needs of clients who live and work in rural and frontier environments. The primary occupations of those living in rural areas include farming, ranching, or other agriculture-related work. Farming is consistently ranked as one of the most high-risk occupations for work-related injuries and accidents; therefore, it is critical that health education programs include content to prepare future medical and health professionals to work with this population. *Purpose and Description:* This paper describes the rural issues component of the occupational therapy curriculum at The University of South Dakota. This rural issues module is designed to provide occupational therapists with training about the physical, temporal, and sociocultural aspects of production agriculture and the impact these have on the health and well-being of the agricultural population. It also addresses the occupational therapy implications for farmers and ranchers who have disabilities. Student assessments of the course content have been above average. *Conclusion:* Training in agricultural health enables our occupational therapy students to be well prepared for work in the rural and frontier areas of South Dakota and other rural locations.

There is a current need for occupational therapists and other health care professionals in rural and medically underserved areas of the United States.<sup>1,2</sup> In order to provide this service, health care students should receive training regarding the resources and barriers unique to rural practice, and specifically, characteristics of an agricultural population that need to be considered when working with this client population. However, there are very few published descriptions of coursework for allied health professionals in general, with the exception of works by Donham and Thelin<sup>3</sup> and Langley et al,<sup>4</sup> and published descriptions of occupational therapy-specific didactic

coursework in the United States designed to teach students about the unique physical, sociocultural, and temporal environmental considerations for those who live and work in rural, agricultural communities do not exist. Therefore, the purpose of this paper is to describe the rural issues component of The University of South Dakota (USD) Department of Occupational Therapy's curriculum that exposes students to the physical, sociocultural, and temporal aspects in the agricultural community, which influence the way that occupational therapy services are provided in these areas.

The demographics of South Dakota validate the need for occupational therapy education specific to practice in rural, agricultural communities. US Census data indicate that South Dakota has a mean population density of 9.9 people per square mile as opposed to the national average of 79.6 people.<sup>5</sup> Out of the 66 counties in South Dakota, all but 19 are at least in part medically underserved<sup>2</sup> and all but 9 of them are shortage areas for mental health care.<sup>1</sup> In 2002, almost 21% of the population was employed in farm or farm-related work and almost 89% of the total 31,736 total farms in South Dakota were family farms.<sup>6</sup> In summary, with few exceptions, South Dakota is a very rural state that is comprised largely of farmers and ranchers who live and work in areas that are lacking sufficient access to professional medical care. Since one of the goals of the Department of Occupational Therapy at USD is to prepare students for practice within the state of South Dakota<sup>7,8</sup> the USD Occupational Therapy Department

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curriculum includes a component specific to practice in rural, agricultural communities.

Within the health care and occupational therapy literature, several authors discuss the barriers to clinical practice in rural areas. These barriers include, but are not limited to the isolation often experienced by rural practitioners; the wide range of clients that are served in rural areas and the need for up-to-date knowledge and skills in all of these diagnostic conditions; the extensive travel that is required to practice in rural areas; and the decreased ability to recruit and retain practitioners to rural areas.<sup>9-12</sup> Overall, it appears that because not many health education programs provide specific education and training about the unique nature of practicing in rural and remote areas, practitioners working in these environments are often presented with numerous challenges and obstacles.

Strasser<sup>13</sup> cites 2 main reasons medical professionals choose to pursue clinical work in rural areas: having previously lived in a rural area, and having positive educational and/or fieldwork experiences in rural areas. Australian researchers Russell et al<sup>14</sup> found that when occupational therapy students completed a rural fieldwork experience they were more likely to consider a rural setting for future employment than those students who did not have a rural experience. These students had more positive attitudes about rural practice and were confident that they had learned the skills needed to be successful in this practice setting.<sup>9,14</sup> Therefore, literature suggests that specifically addressing rural issues in educational curriculums will serve as a vehicle that will encourage more health care practitioners to live and work in rural areas.

There are two examples in the existing literature that discuss how health education programs have included rural components in their educational curriculum. The University of Mary in Bismarck, North Dakota, added a 1-month intensive course in rural community health to better prepare physical therapy students for practice in rural areas.<sup>15</sup> This course consists of three 1-week modules including seminars, fieldwork experiences and a culminating community education service project. Similarly, LaPorta et al<sup>16</sup> describe a weekend course and a 5-week fieldwork experience that enhance student exposure to rural health issues at the Department of Physical Therapy at the University of Nevada, Las Vegas.

Specific didactic content of the limited rural practice educational programs described in the literature vary from one program to another. However, some common topics include reimbursement mechanisms in rural settings; using technology to assist with patient care and with professional interaction;

assistive technology and other adaptive equipment strategies for patient care; interdisciplinary or transdisciplinary health care teams; management and marketing strategies; and a variety of service delivery systems such as home health care, special education, and hospice services.<sup>10,11,16-19</sup> While this content is useful, the emphasis is on rural practice and how health care workers can overcome the barriers associated with working in isolated areas. What is lacking in the scholarly literature is a description of the way in which educational programs can not only teach and expose students to rural practice, but also how to specifically engage the student in a study of the unique physical, sociocultural, and temporal aspects, which influence people who work in production agriculture. In other words, teaching students about the culture that is agriculture.

People who live and work in production agriculture are involved in a very dangerous occupation. Farming is consistently ranked as one of the most dangerous occupations in the United States.<sup>20</sup> These dangers stem from the fact that producers work with heavy equipment and machinery as well as unpredictable livestock. In general, they work long hours during peak seasons of the year and continue to work well past retirement age. Producers are often the business manager, mechanic, laborer, and office assistant all at one time. They are dependent upon many unknown factors such as the weather and markets for their livelihood. They often live and work in the same location; this makes it difficult for them to separate work from family and leisure life. Finally, for many producers their work is on the family farm, and other family members, including young children are often involved in work tasks.

Therefore, because of the contextual influences that are unique to the agricultural community and because the profession of occupational therapy values these influences in the overall health and well-being of the population, we believe that an in-depth study of the contextual influences associated with production agriculture will better prepare graduates of our program to serve the needs of an agricultural community. Due to the lack of published literature in this area, the purpose of this paper is to describe one component of an occupational therapy educational curriculum designed to prepare students for practice in rural agricultural areas. This curricular component includes introductory knowledge regarding agricultural occupational risk factors, adult and child safety on farms and ranches, farming and ranching with a disability, adaptive equipment strategies for farmers and ranchers with disabilities, and behavioral health issues for the agricultural community.

### **Rural Issues Module**

The Occupational Therapy Program at USD is a 29-month entry-level Master of Science Degree Program consisting of 5 semesters of didactic coursework followed by a minimum of two 12-week fieldwork experiences. Students progress through the occupational therapy program as a cohort and complete their coursework in a set sequence. The majority of the mandatory rural issues component of the curriculum that is the focus of this paper was covered during the third semester, which includes a 5-week intensive summer course. In addition to the curriculum content specific to agricultural issues, students learn in other parts of the curriculum about community program development in rural areas, service delivery systems, reimbursement mechanisms, and interdisciplinary collaboration.

The mission of USD and the occupational therapy program is to prepare students for practice within rural, agricultural communities. Therefore, while rural health issues were informally included in the occupational therapy curriculum at USD from its inception in 1991, the formal rural issues course module that currently exists was developed and introduced in 2004 as the result of advanced training that the course instructor received in rural agricultural health issues and through completion of doctoral education in occupational therapy that emphasized occupation-based and client-centered practice. Through these advanced educational opportunities, we identified the need to teach our occupational therapy students about the unique physical, sociocultural, and temporal environmental considerations for those who live and work in rural, agricultural communities.

The rural issues module constitutes approximately one third of the 4-credit summer intensive course. Thirty students have completed the module and graduated from the program. The topics included within the rural issues module are: an introduction to agricultural occupational health, farm and ranch safety, a study of farm implements, adaptations of farm equipment for persons with disabilities, and rural behavioral health issues. Concepts from each of these topics are integrated to complete the capstone project, which is an occupational therapy intervention plan for a farmer or rancher who has a disability. We have determined that these topics are essential knowledge to prepare occupational therapy students for entry-level practice because they address the physical, sociocultural, and temporal issues that occupational therapists work with their clients to resolve.

Aside from the rural issues module, all occupational therapy students complete 1 of their

2 required 12-week fieldwork experiences in a rural setting. For fieldwork purposes, rural is defined as a community that is either less than 50,000 people, medically underserved, or a site that provides occupational therapy services to a rural area at least 50% of the total fieldwork time.<sup>19</sup> Students take an active role in selecting their fieldwork sites and may choose sites anywhere in the United States. Typically students complete their rural fieldwork in South Dakota, where all settings are rural with the exception of the 2 major cities in the state. Therefore, students in this program not only receive more than 30 hours of didactic coursework related to rural practice and medically underserved areas, but they also have the opportunity to practice in a rural setting and gain experience working with rural and agricultural clientele as they complete their education.

A major goal of the rural issues module on agricultural health is for students to develop a greater appreciation of the sociocultural aspects associated with farming and ranching that are unlike those found in most traditional occupations. This begins with an in-depth study of production agriculture during the summer semester, rural issues module. First, students are presented with an overview of agricultural occupational health issues, such as exposures to dust, chemicals, noise, the sun, and other environmental influences; acute and chronic musculoskeletal risks; and safety issues associated with farming and ranching. This is delivered in an interactive presentation format in order to provide basic knowledge about the occupational risk factors associated with farming and ranching.

Following the overview of agricultural occupational health issues, specific issues related to farm and ranch safety are discussed. Each student is responsible for researching a specific agricultural safety topic in-depth and sharing their findings with their classmates through an in-class discussion. Both adult and child safety topics are reviewed. Adult topics include knowledge about power take-offs, rollover protection, chemical and pesticide use and storage, personal protective device use, livestock handling safety, grain storage, rural driving issues, and all-terrain vehicle use. Child-related topics in addition to those discussed in the adult section include extra riders on tractors, the assignment of appropriate farm tasks to children, and childcare issues as they relate to farm families. Following this discussion students have the opportunity to go onsite to a farm to review firsthand the safety issues discussed in class and to practice using a farm safety assessment in order to identify ways to increase safety on the farm or ranch.

During the rural issues component of the curriculum students also learn about a variety of commonly used farm and ranch equipment, including farm implements and machine shop tools. Each student selects one piece of agricultural equipment to research by reviewing product specification information, visiting an implement dealer, and searching online resources. They also visit vendors to explore the variety of ergonomically designed farm and shop tools that are locally available. The students reconvene in class to share with classmates the findings from their field visits. This same information is also shared electronically among students so that each student can have an informational resource to take with them into future practice.

After students learn about typical agricultural implements, a study of agricultural equipment adaptations for farmers and ranchers with disabilities is initiated. Through resources provided by the National AgrAbility Project<sup>21</sup> students learn about the variety of adaptations that can be made to regular farm and ranch equipment to enable farmers and ranchers who may have either chronic musculoskeletal disorders or disabilities from acute occupational injury continue their work in agriculture. In addition to learning about the wide variety of equipment adaptations, students explore local and national resources for equipment adaptations and installation that are available to consumers. Finally, students see the application of the information learned in class regarding equipment adaptations when they visit the farm of a person who farms despite living with the long-term effects of cerebral palsy.

In addition to a study of the physical aspect of farming, students are also exposed to the behavioral health issues associated with production agriculture. This is achieved through a 3-hour guest seminar provided by a psychologist who works in a rural community with farmers and ranchers who are in need of assistance with managing a variety of psychosocial issues as a result of farming and/or ranching. The students learn why production agriculture is associated with behavioral health issues and also learn about programing and other resources that are currently available to assist the producer in times of crisis. The seminar includes a discussion of how occupational therapy practitioners can play a critical role in the behavioral health of farmers and ranchers.

An out-of-class learning experience provides the capstone learning experience for the didactic course work. In small groups, students seek out a local producer who then becomes the subject for a case study in which the students apply the concepts learned in class. The students conduct a thorough interview to

learn about the daily routines and rituals of the producer. Then they speculate in collaboration with the producer how his or her occupations could be adapted in the event of an assigned diagnostic condition. In resolving this case the students are required to analyze the producer's personal characteristics, tasks, and environment in order to make appropriate recommendations that would maximize the producer's ability to continue his or her role in production agriculture.

In summary, several instructional strategies are used during the rural issues component of this educational curriculum. First the students are presented with introductory knowledge about the unique sociocultural, temporal, and physical contexts of production agriculture. Expanding on this knowledge, students actively engage in on- and off-site laboratory experiences to achieve a greater understanding of agriculture and the occupational therapist's role when working with farmers and ranchers.

**Student Assessment.** Because the rural issues component is part of the 4-credit summer intensive course, student performance in the module is included in the final grade for that course. The students are assessed in 2 ways throughout the rural issues component. First, they are evaluated on their active participation in the learning activities for this section of the course. Second, the students prepare a written paper and oral presentation of their case study. This assignment integrates many of the previous concepts explored throughout the rural issues component.

**Course Evaluation.** Students participating in the rural issues module complete both a standard course evaluation that is used for all departments on campus and a written evaluation specific to the module. Historically evaluations for the rural issues course have been above the average for other courses, ranking greater than 4.0 on a 5-point Likert-type scale. In addition to the quantitative course evaluations, students also have the opportunity to provide qualitative feedback regarding the learning experiences in the course, both in written form submitted along with the course evaluation and in oral form through an open forum with faculty at the end of each semester. Each year we have an overwhelming positive response to the off-campus active learning experiences, specifically the opportunity to learn from a farmer who has a disability. The students comment that being able to see firsthand the difference that simple equipment adaptations have made, which allow this gentleman to participate in farming occupations, is a priceless

experience. While the students do not always appreciate the travel and extra time required of them in order to participate in these activities (students on average spend an additional 8 to 10 hours in transit or in visits outside of regularly scheduled class time), they report that the experiences are well worth the extra time and effort.

**Future Directions.** While we believe we have developed many effective instructional strategies for this module in rural issues, we continue to look for strategies that will improve this component of our curriculum. Since its inception, slight modifications in the rural issues component have occurred either due to resource constraints, for example, changes in the availability of guest presenters and out-of-class learning experiences, or due to improved knowledge in this area of practice. We view the current rural issues component of our curriculum as providing the basic knowledge and skills that entry-level occupational therapy practitioners should have upon completion of their educational degree programs. However, we also recognize that even more educational options should be available for practitioners who find themselves specializing in rural, agricultural communities. This is consistent with Cox and Hurwood's<sup>22</sup> recommendations for certification courses for allied health practitioners working in rural and remote health care settings. Therefore, future directions in the USD occupational therapy educational curriculum include offering advanced training in rural and agricultural health for current students or practicing therapists and other medical and allied health professionals. This course is being developed in collaboration with Iowa's Center for Agricultural Safety and Health. It will consist of a more detailed study of agricultural safety and health and include topics in acute and chronic work-related musculoskeletal injury, respiratory hazards, sun and other environmental exposures, chemicals and pesticides, exposure to veterinary pharmaceuticals, farm and ranch safety, behavioral health, and other pertinent topics.

## Conclusion

There are many barriers that limit successful provision of occupational therapy and other allied health services in rural and remote areas. These include the inability to recruit and retain therapists, the lack of educational preparation for work in rural health care, and the isolated working conditions. By providing more educational preparation in the area of agricultural health we may be able to reduce the shortage of allied health professionals, specifically occupational

therapists, needed to provide services in rural and remote areas. The rural issues component of the occupational therapy curriculum at USD has taken a unique approach to rural health education by immersing students in learning strategies that provide them with a greater appreciation for the culture of the agricultural community while at the same time teaching appropriate occupational therapy intervention strategies for this client population. We believe that this approach to addressing the needs of a rural agricultural population will not only encourage more occupational therapists to practice in rural agricultural communities, but will also provide occupational therapy practitioners working in other settings the ability to better meet the needs of those they serve.

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