



## Following the growth of Sarah's baby: An interprofessional education activity for Medical Nutrition Education and Diagnostic Medical Sonography students



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### ABSTRACT

This paper presents the implementation and findings of a pilot activity evaluating an educational activity which involved students from Diagnostic Medical Sonography (DMS) and Medical Nutrition Education (MNE) programs within a College of Allied Health Professions. The activity was implemented in three parts: First, the students worked independently on library modules using a case-based scenario to focus on the use of library resources and evaluation of fetal growth. Second, a hands-on activity focused on assessing fetal growth, and the final component was group education session on nutrition during pregnancy. The student learning objectives for this activity included: 1). Develop student appreciation for the benefits of interprofessional teamwork, 2). Demonstrate an understanding of the assessment of fetal growth, and 3). Demonstrate an understanding of nutrients requirements during pregnancy. Learner outcomes were measured using pre- and post-tests of case study-related and evidence-based search skills-related knowledge, observation during the activity, and a post-activity survey and debriefing. Post-test scores showed a statistically significant increase from the pre-test scores, and the students qualitatively expressed an increased understanding of the roles of each respective discipline. The apparent success of an IPE activity involving DMS and MNE students highlights the fact that successful IPE activities can be created for students whose professional roles may not have obvious clinical overlap.

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### Format

This educational activity was implemented in three parts: First, the students worked independently on a case-based scenario focused on the use of library resources and fetal growth. Second, a hands-on activity focused on assessing fetal growth, and the final

component was a group education session on nutrition during pregnancy.

### Target audience

Diagnostic Medical Sonography (DMS) and Medical Nutrition Education (MNE) students. A total of 15 students participated in the IPE activity; 9 students were enrolled in the DMS program and 6 were enrolled in the Masters of Medical Nutrition program.

### Objectives

The primary learning objectives of this activity were: 1). Develop student appreciation for the benefits of interprofessional

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teamwork, 2). Demonstrate an understanding of the assessment of fetal growth, and 3). Demonstrate an understanding of nutrients requirements during pregnancy.

### Activity description

As part of the study, faculty within the College of Allied Health Professions (CAHP) and faculty from the Education & Research Services Department of the Library of Medicine developed an IPE activity using a single clinical case study. The hypothetical case – the case of an obese, pregnant adolescent and her growth-retarded fetus – was developed to offer specific learning objectives for students enrolled in the MNE and DMS programs. Early in the semester, the MNE and DMS students completed discipline-specific, online tutorials created by the Library faculty. The tutorials guided the students as they used important information resources to research case-related learning issues. During the last month of the semester, the MNE and DMS students met together on 2 separate afternoons for 2-h intervals at each time to participate in the mandatory activity. Students divided into small groups consisting of 1–2 MNE and 1–2 DMS students. Students in each discipline then led activities designed to educate the other profession about the knowledge-base and skills needed when they dealt with pregnant patients with normal and abnormal fetal growth patterns.

#### Library module component

Early in the semester, the MNE and DMS students completed discipline-specific versions of the “Sarah’s Baby” online tutorial.<sup>1–4</sup> The tutorials, created using Guide-on-the-Side software,<sup>5</sup> guided the students as they pretended to care for Sarah, a pregnant, obese, adolescent whose pregnancy is complicated by congenital toxoplasmosis and asymmetric intrauterine growth retardation. As they cared for Sarah, students used MedlinePlus, an ebook package (AccessMedicine), UpToDate, ProceduresConsult, Visual Dx, Google Images, National Guideline Clearinghouse, and PubMed keyword and MeSH searches to address case-based learning issues. The MNE students also used Clinical Pharmacology during the course of their online tutorial. Students found answers to case-related questions, entered these answers in the tutorial and received immediate feedback. After receiving feedback, they entered their answers in a Blackboard-based test which functioned as proof of their work on the required tutorials. Satisfactory test completion was used to verify tutorial completion. Two hours of class time was allocated to tutorial completion.

#### Diagnostic medical sonography component

The Diagnostic Medical Sonography students hosted the first IPE activity. The activity took place in a large open classroom. The location was selected as it provided an environment that was conducive to active learning with room for ultrasound equipment, standardized patient interviews and access to the iWall for group presentations. It was also in close proximity to a Clinical Simulation Center which allowed the students to scan an actual obstetrics (OB) patient in a simulated clinical exam room. Vidyo distance learning technology was used to connect students at a satellite campus 250 miles away from the primary site. An agenda was designed jointly by the faculty to optimize the 2-h time period and to ensure that all objectives of the IPE activity were achieved. Faculty from Radiation Sciences and the library launched the activity with introductions from all participants, a brief overview and definition of interprofessional education, and iWall training. The iWall is a multimedia platform that displays PowerPoint presentations and offers group

interactivity with the ability to write and draw on the screen. Faculty noted that as students entered the room, they searched for their classmates and grouped with DMS students on one side of the room and MNE students on the other side.

The first group of ultrasound students used the iWall to give a presentation on the physics of ultrasound, indications for obstetric ultrasound exams and normal anatomical landmarks used to perform biometric measurements of head circumference, abdominal circumference and femur length. All measurements are needed to help detect abnormal fetal growth or intrauterine growth restriction (IUGR). In the next 45 min segment students were divided into groups, 2 DMS students with 1–2 MNE students, and rotated through three interactive stations allowing the medical nutrition students to experience different aspects of a sonographer’s role in patient care.

Station 1: Patient History. Students worked together to interview a standardized patient who portrayed Sarah, a 16 year old young woman who just recently found out that she was pregnant. The DMS students assisted the MNE students in gathering a medical history to complete the OB patient information sheet.

Station 2: OB Scan Phantom. A 23 week ultrasound scanning phantom was used to help reinforce the anatomical landmarks that are needed to perform measurements for monitoring fetal growth. During this activity, the MNE students scanned the phantom while the sonography students assisted with running the ultrasound machine and helping with scanning techniques to locate the fetal head, abdomen and femur. Measurements were taken by the MNE student and analyzed with machine software to show a normal fetal growth pattern.

Station 3: OB Scan Model/Patient. The OB model/patient allowed for the Medical Nutrition students to experience the difference between scanning on a phantom versus a real fetus; the challenges of obtaining the same measurements on a fetus that is moving during the scan. They also were able to experience patient questions and comments that are part of a routine sonogram. Once again, the MNE students did the scanning and the sonography students offered tips and encouragement.

The next part of the IPE had all the students around the iWall again for a DMS student presentation on the types of IUGR, the etiologies of IUGR and the sonographic findings associated with IUGR. Using this information, the interprofessional groups gathered at the iWall and worked through actual case studies with the sonography student helping the Medical Nutrition students analyze ultrasound growth reports by circling the measurements of interest, determining the type of IUGR present and drawing a fetus reflecting the type of IUGR. The final IPE component had the students using their research skills to perform a literature search for most common causes of each type of IUGR.

#### Medical Nutrition Education component

The second IPE session was hosted by the MNE students. Prior to the activity, the MNE students chose nutrients that are crucial during pregnancy for normal fetal growth and development, including folate, vitamin A, and calcium. The students again divided into small groups consisting of 1–2 MNE and 1–2 DMS students. Each group focused on a specific nutrient and used the skills from participating in the library module part of this activity to search evidence-based databases to discover nutritional requirements for each of these nutrients during pregnancy as well as food sources. Each small group reported their findings back to the larger group.

After identifying and discussing nutrients of high importance during pregnancy, the MNE student demonstrated how to perform a 24-h diet recall for assessment of nutrient intake in order to show the DMS students how the diet of a pregnant woman would be

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