

V(A). Planned Program (Summary)

Program # 7

1. Name of the Planned Program

Childhood Obesity, Nutrition, and Health

Reporting on this Program

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
305	Animal Physiological Processes	0%		40%	
703	Nutrition Education and Behavior	10%		20%	
704	Nutrition and Hunger in the Population	80%		20%	
724	Healthy Lifestyle	10%		20%	
	Total	100%		100%	

V(C). Planned Program (Inputs)

1. Actual amount of FTE/SYs expended this Program

Year: 2013	Extension		Research	
	1862	1890	1862	1890
Plan	10.0	0.0	6.3	0.0
Actual Paid Professional	11.0	0.0	6.3	0.0
Actual Volunteer	0.0	0.0	0.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
156105	0	284015	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
156105	0	284015	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
0	0	0	0

V(D). Planned Program (Activity)

1. Brief description of the Activity

Nutrition efforts will focus on educational programs which increase knowledge and skills in nutrition needs of children and incorporate physical activity into lifestyle; media outreach; health fairs; training; assessment/data collection. Programs which teach body size acceptance will also be targeted to youth.

EFNEP adult curriculum taught in a series of lessons; adult one-time lessons; youth curricula taught in a series of lessons and day camps; displays and demonstrations; state and community partnerships with agencies serving the low-income; training for educators; evaluation of program; Ongoing- Updating of curricula and materials.

Since skeletal muscle is the main site for utilization of glucose and fatty acids in the body and insulin resistance in skeletal muscle is the key step in the incidence of type 2 diabetes, we hypothesize that impaired fetal skeletal muscle growth due to nutrient deficiency plays an important role. Our goal is to understand how the development of fetal skeletal muscle affects the properties of skeletal muscle of adulthood, and to develop effective strategies to mitigate or avoid incidence of diabetes and obesity caused by impaired skeletal muscle development due to fetal nutrient deficiency.

UW AES researchers intend to investigate the role of maternal nutrition in programming of pre- and postnatal body composition.

2. Brief description of the target audience

The University of Wyoming is committed to reaching underrepresented groups and individuals and to implementing the objectives of equal opportunity regulations relative to the consideration and treatment of clientele for participation in all programs regardless of their race, national origin, gender, age, religion, or disability. Specific target audience groups for the CNP (EFNEP) program: Low-income adults, Youth in Title I schools.

All other nutrition efforts targeted audience includes: general public, both adults and youth and policy makers.

3. How was eXtension used?

eXtension is utilized with all extension initiatives as a resource. eXtension is prominently highlighted on the UW Extension Web site home page. Additionally, extension personnel are made aware of professional development opportunities offered through eXtension.

V(E). Planned Program (Outputs)

1. Standard output measures

2013	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Actual	2178	15000	4778	5000

2. Number of Patent Applications Submitted (Standard Research Output)

Patent Applications Submitted

Year: 2013

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

2013	Extension	Research	Total
Actual	0	14	14

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Number of educational programs delivered to youth. Target is number of programs.

Year	Actual
2013	140

Output #2

Output Measure

- Number of youth participating in educational program targeting childhood obesity. Target is number of youth participating.

Year	Actual
2013	4778

Output #3

Output Measure

- Number of partnerships formed in local counties of professionals to collaborate on childhood obesity, nutrition, and health issues. Target is number of partnerships formalized.

Year	Actual
2013	30

Output #4

Output Measure

- Conduct research on obesity, nutrition, and health. Target is number of projects.

Year	Actual
2013	4

Output #5

Output Measure

- Number of participants in educational programs offered in Nutrition initiative. Target is number of participants.

Year	Actual
2013	10266

Output #6

Output Measure

- Increased adoption of healthy food practices and participation in regular physical activities. Target is number of participants reporting outcome.

Year	Actual
2013	5000

V(G). State Defined Outcomes

V. State Defined Outcomes Table of Content

O. No.	OUTCOME NAME
1	Improved knowledge of food guide pyramid, serving sizes, and physical activity. Targets are the number of participants reporting outcome.
2	Improved eating behavior practices, food choices, and lifestyle habits. Targets are the number of participants reporting outcome.
3	Individuals gain awareness, knowledge and skills related to: improved attitude about healthy eating; increased knowledge of healthy food choices; improved skills in selection of healthy foods; improved body image. Target is number of participants reporting outcome.
4	Youth incorporate skills and change behaviors related to: increased physical activity; increased knowledge of healthy food choices; improved selection of healthy foods; understanding of serving sizes; improved body image.
5	Youth and families experience: improved nutritional health; reduced medical costs; health improved through community opportunities; healthier weight; decreased risk factors for nutrition-health related problems. Target is number of participants reporting outcome.
6	Create awareness of research on relationships between obesity, nutrition, and health. Target is number of projects.

Outcome #1

1. Outcome Measures

Improved knowledge of food guide pyramid, serving sizes, and physical activity. Targets are the number of participants reporting outcome.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	4178

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Wyoming youth and adults are at risk as reflected by various health-related data: For example, over 20 percent of Wyoming adults report no leisure time physical activity, 47 percent of Wyoming high school students report not being enrolled in a physical education class, and 78 percent of both Wyoming adults and high school students do not eat recommended amounts of fruits and vegetables. Additionally, research in Wyoming, Montana, and Idaho documented body dissatisfaction as a significant predictor of self-consciousness keeping respondents from participating in physical activity.

What has been done

A variety of classes (many multi-session) on Steps to a New You, Body Works, Healthy Eating, Weight Management and basic nutrition were conducted by nutrition educators. Articles were published in newsletters, newspaper columns and educational displays were developed. Youth were reached through series of classes conducted in schools by 4-H, Nutrition and Food Safety and Cent\$ibile Nutrition educators.

Results

64 percent of adults and 59 percent of youth reported increased familiarity with MyPlate. 39 percent reported being physically active for at least 30 minutes per day, on four or more days per week, more often.

39 percent reported getting a 'super-sized' portion less often. (A 'super-sized' portion of food or beverage is one that is much bigger but costs only a little more money).

81 percent showed improvement in one or more nutrition practices.

25 percent reported weight loss as a result of changes in eating, meal planning, and increasing physical activity.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

Outcome #2

1. Outcome Measures

Improved eating behavior practices, food choices, and lifestyle habits. Targets are the number of participants reporting outcome.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	3906

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Wyoming youth and adults are at risk as reflected by various health-related data: For example, over 20 percent of Wyoming adults report no leisure time physical activity, 47 percent of Wyoming high school students report not being enrolled in a physical education class, and 78 percent of both Wyoming adults and high school students do not eat recommended amounts of fruits and vegetables. Additionally, research in Wyoming, Montana, and Idaho documented body dissatisfaction as a significant predictor of self-consciousness keeping respondents from participating in physical activity.

What has been done

A variety of classes (many multi-session) on Steps to a New You, Healthy Eating, Body Works, Weight Management and basic nutrition were conducted by nutrition educators. Youth participated in day camps, and in-school curriculum including Grazing with Marty Moose, Munching through Wyoming History, Passports to Food Adventures, and WIN Kids. Articles were published in newsletters, newspaper columns and educational displays were developed.

Results

End of session and follow up evaluations indicated:
39 percent reported being physically active for at least 30 minutes per day, on four or more days per week, more often.

92 percent showed improvement in one or more nutrition practices.
41.5 percent serve more than one kind of fruit and 42 percent serve more than one kind of vegetable each day.
40 percent of youth could correctly identify the physical activity recommendation for children.
25 percent reported weight loss as a result of changes in eating, meal planning, and increasing physical activity.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior
724	Healthy Lifestyle

Outcome #3

1. Outcome Measures

Individuals gain awareness, knowledge and skills related to: improved attitude about healthy eating; increased knowledge of healthy food choices; improved skills in selection of healthy foods; improved body image. Target is number of participants reporting outcome.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	5000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Wyoming residents are at risk as reflected by various health-related data: For example, over 20 percent of Wyoming adults report no leisure time physical activity, 47 percent of Wyoming high school students report not being enrolled in a physical education class, and 78 percent of both Wyoming adults and high school students do not eat recommended amounts of fruits and vegetables.

What has been done

UW Extension educators conducted over 400 classes which emphasized a holistic approach including proper nutrition, increasing physical activity and healthy food choices. Strong Bones - Strong People, basic nutrition, and Steps to a New You were all programs focused on objectives. Youth curriculum developed by the UW Cent\$ible Nutrition program was also implemented in

schools across the state.

Results

5000 individuals participated in 400 classes of which 10 were multi-session with four to eight sessions in length. Over 50 percent, or 2500 participants reported improved eating behavior practices, food choices, and lifestyle habits through end of session evaluations.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

Outcome #4

1. Outcome Measures

Youth incorporate skills and change behaviors related to: increased physical activity; increased knowledge of healthy food choices; improved selection of healthy foods; understanding of serving sizes; improved body image.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Action Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	4500

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Approximately 13,000 of 57,000 Wyoming children ages 10 to 17 years (22.9%) are considered overweight or obese according to BMI for age standards. Wyoming ranks third among the 50 states and D.C. in overall prevalence.

* Only one in six (16.3%) Wyoming children in higher income families are overweight or obese. The state ranks third in prevalence among higher income children.

* One in five (20.2%) Wyoming children with private health insurance are overweight or obese.

* Wyoming children are more likely than their counterparts nationwide to be physically active for at least 4 days per week, and less likely to spend 2 hours or more in front of a television or computer screen.

What has been done

UW Extension utilized EFNEP youth curricula taught in a series of lessons and day camps; displays and demonstrations; Other nutrition efforts focused on educational programs which increase knowledge and skills in nutrition needs of children and adults and also incorporate physical activity into lifestyle; educators use media outreach (newspapers, newsletters, radio); health fairs; Programs which teach body size acceptance also are targeted to youth. A variety of classes (many multi-session) on Steps to a New You, Body Works, Healthy Eating, Weight Management and basic nutrition were conducted by nutrition educators. In addition 4-H educators partner with Cent\$ible Nutrition to implement special interest classes in the school system.

Results

Results of the educational programs (several were series of 5 - 8 weeks) reaching 4500 youth included:

- 81 percent showed improvement in one or more nutrition practices.
- 36% could identify healthy snacks.
- 50 % increased their knowledge about carbohydrates as a source of energy.
- 38% reported eating a variety of foods;
- Over 59% increased their knowledge of MyPlate food groups;
- 22% could identify missing food groups in meals;
- 30.5% could identify physical activity recommendations for their age;
- 35% are physically active for at least 30 minutes per day during four or more days per week.
- 30% increased their knowledge of body size diversity.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

Outcome #5

1. Outcome Measures

Youth and families experience: improved nutritional health; reduced medical costs; health improved through community opportunities; healthier weight; decreased risk factors for nutrition-health related problems. Target is number of participants reporting outcome.

2. Associated Institution Types

- 1862 Extension

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	5000

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Approximately 13,000 of 57,000 Wyoming children ages 10 to 17 years (22.9%) are considered overweight or obese according to BMI for age standards. Wyoming ranks third among the 50 states and D.C. in overall prevalence.

* Only one in six (16.3%) Wyoming children in higher income families are overweight or obese. The state ranks third in prevalence among higher income children.

* One in five (20.2%) Wyoming children with private health insurance are overweight or obese.

* Wyoming children are more likely than their counterparts nationwide to be physically active for at least 4 days per week, and less likely to spend 2 hours or more in front of a television or computer screen.

What has been done

UW Extension utilized EFNEP youth curricula taught in a series of lessons and day camps; displays and demonstrations; Other nutrition efforts focused on educational programs which increase knowledge and skills in nutrition needs of children and adults and also incorporate physical activity into lifestyle; educators use media outreach (newspapers, newsletters, radio); health fairs; Programs which teach body size acceptance also are targeted to youth. A variety of classes (many multi-session) on Steps to a New You, Healthy Eating, Weight Management, Dining with Diabetes, and basic nutrition were conducted by nutrition educators.

Results

Results of the 400 educational programs (several were series of 5 - 8 weeks) reaching over 5000 youth and adults included:

92 % showed improvement in one or more nutrition practices.

95.5% had a positive change in any food group.

63% reported using the Nutrition Facts label to make food choices more often.

Over 64% increased their knowledge of MyPlate food groups;

24% could identify missing food groups in meals;

45% could identify physical activity recommendations for their age;

39% are physically active 30 minutes per day, four or more days a week.

4. Associated Knowledge Areas

KA Code	Knowledge Area
703	Nutrition Education and Behavior

Outcome #6

1. Outcome Measures

Create awareness of research on relationships between obesity, nutrition, and health. Target is number of projects.

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Actual
2013	4

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Obesity is increasing at an alarming rate worldwide, and in the US it is estimated that 68% of the population is overweight or obese. Of pregnant women in the US, 18-35% are estimated to be clinically obese. Further, children born to overweight/obese women are at an increased risk of developing symptoms of metabolic syndrome which include obesity, insulin resistance, hyperglycemia, hyperlipidemia, hypertension, and cardiovascular disease. Scientific evidence has accumulated suggesting that an adverse in utero environment can alter normal growth and development leading to an increased chance for obesity and other related diseases in postnatal life. Further, evidence has been presented which demonstrates that the consequences of an environmental insult such as maternal overnutrition/obesity may not be limited to their immediate offspring (F1 generation), but may be transmitted epigenetically to future generations.

What has been done

For this study we used adult F1 female lambs whose obese mothers had been fed a highly palatable diet to excess throughout pregnancy (OBESE females), and F1 female offspring from lean ewes fed the same diet only to requirements (CONTROL females). During pregnancy, the OBESE ewes exhibited markedly greater increases in body weight and adiposity, in association with increased insulin and leptin resistance than CONTROL ewes fed only to requirement. Data from this study are consistent with the hypothesis that normal weight OBESE F1 ewes fed only to requirements are predisposed to exhibit the same metabolic disturbances as their obese/overfed mothers when these females are exposed to the stresses of pregnancy. As a result, OBESE F2 lambs are programmed to exhibit the same developmental and hormonal abnormalities as their OBF1 mothers, demonstrating a true multigenerational effect.

Results

These data demonstrate for the first time in a large precocial species similar to humans that maternal obesity not only affects the health of mothers and their offspring, but also impacts the

health of their granddaughters, demonstrating a true multigenerational effect. At present, we don't know how many generations will be effected, but research is ongoing. It is imperative that we devise clinically relevant methods to intervene in obese pregnancies to assure the birth of a normal healthy baby and prevent the worldwide obesity epidemic.

4. Associated Knowledge Areas

KA Code	Knowledge Area
305	Animal Physiological Processes
703	Nutrition Education and Behavior
724	Healthy Lifestyle

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Competing Programmatic Challenges

Brief Explanation

Many conditions and situations that exist in Wyoming are similar to those in other parts of the country, for example, the following:

Food choices made available and advertised to consumers by producers; Access to timely and accurate information; Coordination and cooperation of federal agencies and state partners, schools and other youth agencies; Existence of local collaboration; Level of funding at federal, state and local level; and Willingness of community organizations, to collaborate with The University of Wyoming Extension.

If EFNEP funding is decreased, appropriations will impact program delivery. Population changes impact limited resource audiences eligible for program.

Availability of funding for research in childhood obesity.

V(I). Planned Program (Evaluation Studies)

Evaluation Results

UW Extension Nutrition and Food Safety educators teach curricula which uses a holistic approach to nutrition and health. All participants completed a pre- and post-questionnaire, enabling to measure new attitudes gained such as, living a life focused on health, honoring hunger, and enjoy physical activity every day. The following are significant impacts reported by them.

50% Participants increased physical activity purposely. 39 percent reported being physically active for at least 30 minutes per day, on 4 or more days per week more often.

90% of participants now stop eating when they start to feel full.

Research data have provided conclusive evidence that changes in individual lifestyles and behaviors can lead to improved health status (Centers for Disease Control and Prevention, 1997; Canadian Nurses Association, 1992).

Adults who participate in programs complete end of session evaluations. Those in series of lessons complete a pre- and post-survey and/or follow up evaluations. 4000 adults completing lessons reported the following.

Nutrition Practices and Food Intake

- 92 percent improved in one or more nutrition practices.
- 90 percent had a positive change in any food group.
- 64 percent use the MyPlate to make food choices more often.
- 41.5 percent serve more than one kind of fruit, and 42 percent serve more than one kind of vegetable to their families each day more often.

Physical Activity Practices

- 36 percent are physically active for at least 30 minutes per day during four or more days per week

2468 youth participating in Grazing with Marty Moose, Munching Through Wyoming History, Passports to Food Adventures, and WIN Kids curricula reported the following through pre- and post-assessments to capture behavior changes.

Specific questions for each curriculum showed the following after the lessons.

- 50 percent improved their knowledge of MyPlate food groups.
- 31.5 percent more correctly identify the number of food groups in a meal and 22.2 percent more correctly identified missing food groups in a meal.
- 44.9 percent tried new fruits and 37.4 percent tried new vegetables more often.
- 29 percent could correctly identify the physical activity recommendation for children.
- 81 percent of all youth improved knowledge or skill(s) necessary to choose foods consistent with the Federal Dietary Guidelines.

Key Items of Evaluation

Research data have provided conclusive evidence that changes in individual lifestyles and behaviors can lead to improved health status (Centers for Disease Control and Prevention, 1997; Canadian Nurses Association, 1992).

100 percent of participants gained knowledge and raised awareness of the role nutrition and physical activity play in health.