The Abuela Project:  
A Community Based Food Safety Intervention involving *Queso Fresco*, a Raw-Milk Cheese

Val Hillers, Ph.D., R.D., Washington State University  
Ryan Bell, M.D., (M.S. from WSU)  
Theo Thomas, WSU/Yakima Co. Cooperative Extension

Project Background

- In 1997, over 90 cases of *Salmonella Typhimurium DT 104* were reported in Yakima County, Washington.

- Symptoms included diarrhea, fever, abdominal pain, bloody stool, vomiting.

- Median age was 4 years old.
Project Background

- Majority of cases involved children of Hispanic heritage.

- A CDC study implicated unpasteurized-milk *queso fresco* as the source of the *Salmonella* infections.

- Centers for Disease Control and Prevention (CDC) emphasized the need for an intervention.

Pre-Intervention Salmonellosis Cases

Incidence of *S. Typhimurium* infections in Yakima County and Washington State, by six-month interval, 1990-1997
**Intervention Goals**

- Decrease consumption/production of unpasteurized-milk *queso fresco*
- Increase knowledge of hazards associated with raw milk
- Maintain/Promote a nutritious food in the Hispanic diet
- Maintain a traditional food custom

**Intervention Team**

- Washington State University food science and nutrition faculty and an M.S. student
  - Developed intervention and materials; conducted the program evaluation
  - Technical assistance to enable unlicensed vendors of queso fresco to develop safe product, get licensed
- WSU/Yakima County Cooperative Extension
  - Implemented the consumer intervention
  - Newsletters to dairy farmers re risks of raw milk leaving their farm
**Intervention Team**

- Yakima County Health Department
  - Publicity about risks of raw milk and assistance in distribution of materials
- Washington Migrant Council
  - Recruited people to participate in the intervention
- Washington Dept. of Agriculture
  - Removed raw milk cheese from commerce
  - Encouraged dairy farmers to guard against raw milk leaving the farm
- Washington Dept. of Health
  - Provided encouragement, technical assistance

**Pre-Intervention**

- Collection of preliminary data via survey
- Design of a safer, pasteurized-milk *queso fresco* recipe
- Design of a flyer to illustrate the recipe
- Acquisition of funding
- Design of a program to introduce the new recipe
Pre-intervention Survey Data

~ 50% got *queso fresco* from family member, neighbor, vendor.

~ 50% did not know if *queso fresco* was made from raw milk.

~ 40% did not believe raw-milk *queso fresco* could cause illness (~25% unsure).

~ 60% had not heard of *Salmonella*.

Safe *Queso Fresco* Recipe

- Preliminary pasteurized-milk recipe was obtained from Julia Herrera, a Mexican-American woman from Yakima, WA*
- WSU dairy scientists Lloyd Luedecke and Mike Costello modified the recipe to:
  - Decrease pH
  - Improve ease-of-preparation
  - Increase shelf-life
  - Maintain acceptable taste/texture

(*The idea of modifying a recipe obtained from the local community was borrowed from a presentation re chitterlings by EA Peterson, 1997.*)
Safe *Queso Fresco* Pamphlet

- Developed by Ryan Bell, M.S. student in human nutrition

- Topics covered by the flyer:
  - Heat treatment of unpasteurized milk
  - Sanitization of cheese-making implements
  - Step-by-step instructions in Spanish and English
  - Has graphical illustrations for low literacy audience
Project Funding

- $5,000 gift obtained from the Washington State Dairy Products Commission for Yakima County intervention.
  - Used to purchase Abuela Educator incentive package
- Later, received $22,500 from USDA (EFSF-04800) to expand intervention to other counties in WA.
- Abuela project received several awards, which included $6000 in award money. We used these funds to continue the intervention.
Trained “Abuela” Educators

- Older Hispanic “grandmothers”
  - respected
  - hold positions of authority
  - carry on traditions

(We borrowed this idea from Colorado State University who trained Abuelas as nutrition educators.)

Abuela Educators

- Original group - 15 people from Yakima County
- Later, Abuelas were trained in 6 other counties
- Training consisted of
  - How to make *queso fresco* with pasteurized milk
  - Hazards of raw milk
  - How to sanitize equipment
- Each Abuela agreed to teach 15 others.
### Incentive Packages

**Abuela Educators (15)**
- Colander
- 5-quart mixing bowl
- Thermometer
- Cheese cloth
- Apron
- Tote bag
- 8-cup mixing bowl
- 6-quart stock pot

**Participants (225)**
- Tote bag
- Thermometer
- Cheese cloth
- Measuring spoons
- 8-cup mixing bowl

### Training Abuela Educators
Safe Cheese Workshop Results

- Data was gathered from *Abuela* educators and participants in workshops.
  - Pre-test was administered just before the workshops.
  - Post-test was given at conclusion of the workshops.
  - Six-month follow-up interview was conducted via telephone by bilingual interviewers.

Will People in the Community Eat Pasteurized-Milk *Queso Fresco*?

\[ X^2 = 29.9 \text{ (significant/p<.01)} \]

Before Safe Cheese Workshops
- (n=117)
- (n=3)
- (n=44)

After Safe Cheese Workshops
- (n=153)
- (n=2)
- (n=8)
Are there Health Risks Associated with Eating Unpasteurized Milk and Cheese?

$X^2 = 1.5$ (no significant change)

Before Safe-Cheese Workshops

- YES: (n=13)
- NO: (n=13)
- NOT SURE: (n=21)

6-Month Follow-Up

- YES: (n=4)
- NO: (n=3)
- NOT SURE: (n=0)

What Kind of Milk do You Use to Make *Queso Fresco*?

$X^2 = 19.3$ (significant/p<.01)

Pre-Workshop

- Fresh Unpast: (n=26)
- HT/Past Milk: (n=26)
- Not Sure: (n=5)

6-Month Follow-up

- Fresh Unpast: (n=0)
- HT/Past: (n=47)
Conclusions

• Making *queso fresco* at home is a strongly held custom within the Mexican-American community.
• Many people were aware of the risks of raw milk. However, they continued to make raw-milk *queso fresco* to preserve their cultural heritage.
• Behavior change was prompted by availability of a safer recipe that yielded an acceptable product.

Conclusions

• Mexican-Americans were very receptive to using the recipe for pasteurized milk *queso fresco* because:
  – The pasteurized milk cheese was safer to eat.
  – The recipe was easier to make than the traditional recipe.
  – The recipe produced a good tasting cheese.
  – We modified a recipe developed by a respected woman in the community, which encouraged acceptance of the recipe.
• The incentives encouraged participation in the safe cheese workshops.
Pre and Post Intervention Community Surveys

- We surveyed people who did not participate in safe cheese workshops to see if the publicity had increased awareness of risks of raw milk *queso fresco*.

**Does Raw-Milk *Queso Fresco* Cause Illness?**

$X^2 = 25.3$ (significant/p<.01)
Post Intervention Salmonella Cases


The Intervention was Successful!

- Incidence of *Salmonella* infections dropped rapidly during the intervention.
  - Avoiding illness of the children appears to have been a prime motivator.
- The cultural tradition of home preparation of *queso fresco* was preserved.
- Some of the unlicensed small vendors who were formerly selling raw-milk *queso fresco* are now licensed and sell pasteurized-milk *queso fresco.*
Reflections

• Many food safety educational campaigns focus on avoiding certain risky foods.
• Encouraging people to abandon a food custom accelerates cultural decomposition and may be nutritionally deleterious.
• If possible, interventions should encourage modification rather than elimination of traditional cultural foods.

Reflections

• Food safety interventions that use the expertise of nutrition educators, microbiologists, food scientists and community-based educators are most likely to be effective at reducing microbial risks, maintaining the traditional taste of foods, and preserving cultural food patterns.
Current Status of Project

• Safe cheese workshops continue to be held in dairy farming areas of Washington.
  – In Yakima County, rates of *Salmonella* infections rise without continued intervention.
• Video showing the process of making *queso fresco* was developed to use when hands-on training was not feasible.

Sharing of materials

• More than 10,000 copies of the brochure have been distributed by WSU.
• Brochure was reprinted by FDA for distribution at Health Fairs in major US cities.
• Food safety educators in about 20 other countries have requested copies.
  • Home production of raw-milk fresh cheese is common in many countries.
  • Educators have revised the procedures as needed to produce the cheese made in their locality.
Directions for Making *Queso Fresco*

- Available from Washington State University Bulletins Office (800-723-1763 or pubs.wsu.edu)
  - Fresh Cheese Made Safely
    - Brochure (PNW539)
    - Video and brochure (VT108)
  - *Queso Fresco Hecho Saludable*
    - Brochure (PNW539S)
    - Video and brochure (VT108S)

For Additional Information about the Abuela Project