

Sabrina Su

Empowering Mothers: Iranian Study Demonstrate an Effective Way to Reduce High-risk Behavior Related to Brucellosis

Brucellosis is one of the most widespread zoonotic infections. With Unhygienic practices and inadequate knowledge, brucellosis remains a public health hazard. A study was conducted on 136 mothers in rural Torbat-e Jam, Iran, from April 2020 to February 2021. Researchers found that providing educational programs based on a model of empowering families effectively impacted participants' attitudes and modified their behavior related to brucellosis.

Brucellosis is a bacterial disease that primarily impacts animals like cattle, goats, swine, sheep, and dogs (WHO, 2020). Humans can contract the disease via the consumption of contaminated animal products, breathing in particles in the air, or contact with infected livestock. For example, drinking raw milk or eating dairy products from infected animals can transmit the disease to humans. The disease spreads from the udders and reproductive organs of cattle, where it can contaminate the milk we consume.

Typically, brucellosis symptoms are similar to the flu, including fever, discomfort, fatigue, and weight loss (WHO, 2020). The onset of symptoms usually takes between 2 to 4 weeks, while in some cases, it can take 2 months. Most patients' symptoms are not severe, and many may go undiagnosed. About less than 2% of the cases result in death, most commonly due to heart complications due to the infection (USDA, 2023; WHO, 2006).

Treatment for this disease involves a combination of antibiotics over a period of time (WHO, 2020). Unfortunately, optimal treatment for pregnant women, newborns, or young children under eight has yet to be determined. Drugs used to fight this infection can potentially cause birth defects (WHO 2006). While the development of a vaccine in animals remains unsuccessful, there is an effective treatment for humans who contract the disease (USDA, 2023).

A recently published case in 2023 details two people in a family in China who contracted brucellosis (Huang & Liao, 2023). A man developed joint disease and pain in his left elbow,

while a 68-year-old woman experienced spinal pain due to an infection caused by brucellosis. After an investigation, they found that they raised goats that transmitted the disease to them. In another case, an 11-year-old girl went to the hospital for stomach pain that she had been experiencing for an entire month (Shaikh et al., 2023). Also, she was experiencing a fever for over two weeks and weight loss. She was then sent to another hospital and underwent tests, which showed that her liver and spleen were abnormally large, and there was fluid in her lungs. In both cases, they were diagnosed with brucellosis, and their condition improved after treatment.

With over half a million human cases reported each year, brucellosis remains designated as a neglected disease by the World Health Organization (Franc et al., 2018; WHO, 2020). It persists in low-income countries across Africa, Central Asia, the Mediterranean Basin, Latin America, and the Middle East. In regions where vaccinating or eradicating infected animals is not a viable option, the focus shifts to preventing the disease through awareness and the promotion of hygienic and safe practices.

An Iranian study assessed the effectiveness of educating mothers based on a family-centered empowerment model to help modify unsafe practices (Shojaei et al., 2022). Consuming contaminated unpasteurized milk products that have not been heated to kill harmful bacteria and inadequate protective equipment when slaughtering livestock are some high-risk behaviors focused on in this study.

Family-centered empowerment model is a training program designed to enhance caregiver's capabilities and boost their mental and physical abilities to strengthen their care for a patient (Shojaei et al., 2022). The first step of the training is to educate individuals through sessions. The main focus of steps two and three involved improving one's self-belief and self-esteem by participating in educational activities. The final step is to analyze and assess the sessions. This approach has been used to ensure that patients are being well taken care of and increase the confidence of the family members who are the caregivers. In this study, researchers

assume that an educational program based on a family empowerment model will modify participants' high-risk behavior.

In rural Torbat-e Jam, Iran, the research aimed to evaluate the impacts of educating mothers of brucellosis patients in managing the disease (Shojaei et al., 2022). Researchers focused on mothers as they often assume the responsibility for the family's health. The study included mothers aged 15 and above who cared for a brucellosis patient in areas where the disease was prevalent for at least 6 months. In total, 4 rural areas were a part of the study. Out of 200 eligible mothers, 136 mothers were left after the screening. They were split into two groups, where 67 participants were assigned to intervention groups and the remaining 69 to non-intervention groups.

Both groups were asked to fill out a questionnaire to provide a starting point (Shojaei et al., 2022). There were 14 questions about the participant's background, 17 were about high-risk behaviors, and 37 were about their self-esteem, attitude, and knowledge. Before the study began, the researchers had 50 caregivers assess the questionnaires to ensure that they aligned with the family-centered empowerment model. Many of the participants have limited education or struggle to read. To mitigate this, questionnaires were read aloud, allowing participants to complete the survey.

Out of 37 empowerment questionnaires, 17 questionnaires were about the disease's risk, transmission, and symptoms, and participants chose from options 1 (false), 2 (I don't know), and 3 (correct). Around 12 items were used to gauge the attitude of the participants from a scale of 1 (disagree) to 3 (agree). Using the same scale, 7 questions were about their self-efficacy. The final 10 questions evaluate their self-esteem on a from 1 (disagree) to 2 (agree).

About 17 questionnaires were allocated to focus on participants' ability to manage high-risk behaviors (Shojaei et al., 2022). The questions evaluate how they process dairy products, their diet, and rearing animal practices. For example, participants were asked if they use masks

and gloves when handling animals or raw food items. They can rate items on a scale of 1 (never) to 5 (always).

After the completion of the questionnaires, participants in the intervention group received 2 months of training of four 2-hour sessions every 15 days (Shojaei et al., 2022). The training was conducted in group discussions of 10, with trained health educators providing lectures, pamphlets, questions, videos, and answers.

Following the family-centered empowerment model, each session focused on a specific topic: attitude, behavior, self-efficacy, self-esteem, and knowledge (Shojaei et al., 2022). Session 1 focused on building knowledge about the disease. Session 2 targeted participants' attitudes toward preventative methods, including boiling milk, handling livestock, and vaccination. Session 3 goal was to boost the mothers' self-efficacy and confidence by promoting good health habits. For example, it strengthens participants' belief that they can prevent the disease by not consuming raw animal products and using protective equipment when handling animals. This session also focused on overcoming gender barriers women face by improving their knowledge and capabilities. In Session 4, trainers focused on managing unsafe practices and increasing awareness to reiterate everything from the other sessions.

Immediately after the completion of the training and 3 months post-intervention, participants were requested to complete the questionnaires again (Shojaei et al., 2022). They compiled the mean of the scores of each construct and determined no significant difference between the intervention group and the non-intervention group at baseline. Participants who received the training demonstrated improvement immediately after the training was completed on all constructs. The most noteworthy improvement was seen in the risky behavior score, while the other constructs showed improvement but not as significantly. The scores of the intervention group decreased after 3 months. The group who did not receive intervention scores did not show any significant change. Those who were not in the intervention group were given training packages after the completion of the experiment and follow-ups.

The intervention based on the family-centered empowerment model proved to be highly effective in changing mothers' behavior and unsafe practices. The study demonstrated that empowering mothers by enhancing their positive attitude, confidence, and knowledge, significant changes were observed. As a result, interventions were successful in modifying mothers' behavior and potentially reducing the risk of contracting brucellosis.

Reference

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