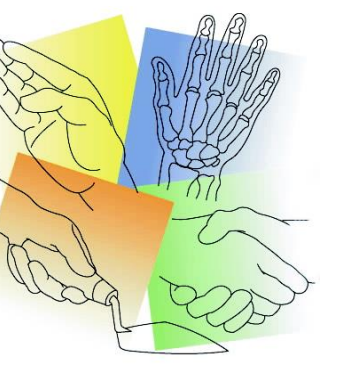




# How Do Beliefs about Anemia among Rural Bolivian Women Influence Health Behavior?

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## INTRODUCTION

- **Anemia is one of the most common health deficiencies**, especially in less-developed countries, where nutritional and health care needs often are not met.
- **Understanding local knowledge of illnesses is paramount to implementing effective health interventions.** In contrast to the many studies on the biological aspects of anemia (Sullivan et al. 2008; Berger et al. 1997; Gonzales et al. 2009; Beall 2001), there is little research on people's conceptualizations of anemia or on how these beliefs might influence health behavior.
- **Spatial factors may also influence health-care seeking behaviors.** Rural communities in the Bolivian *altiplano* are frequently located far away from health posts, making it difficult to find the time to travel, usually on foot, to the nearest clinic (see Image 2).
- **There are especially high rates of anemia in high altitude populations.** Although high altitude populations have developed a variety of adaptations to chronic hypoxia (Beall 2001), this environmental challenge exacerbates anemia.

## HYPOTHESES

- **Hypothesis 1:** Different conceptualizations of anemia and/or the perceived seriousness of anemia influence the probability that women with anemia will purchase and use iron supplements (ferrous sulfate pills).
- **Hypothesis 2:** Proximity of her community to a health post influences the probability that a woman visits the health post to obtain iron supplements.
- **Hypothesis 3:** Learning her anemia status influences a woman's beliefs about health and her conceptualizations of anemia.

## STUDY PARTICIPANTS & METHODS

- Total n=205 women from rural communities surrounding Patacamaya, Bolivia (the central "town"-- a major truck stop at the crossing of 2 major roads).
- 183 non-pregnant women (aged 20-36 years) were tested at least once for anemia with the Hemocue device (Quest Diagnostics). The first hemoglobin (Hb) measurement for each woman was used in the analyses presented here.
- Anemia was defined as Hb <15.5 g/dL due to the very high elevation of Patacamaya (3789 m) (Sullivan et al. 2008).
- Anemic women were given written recommendations that they could take to the local health post (for a 3-month prescription of ferrous sulfate pills, purchase price= 1 *Boliviano*, about 12 cents).
- Follow-up interviews recorded a woman's beliefs about anemia and whether any recommended iron-supplement pills had been purchased and used.
- Conceptualizations of anemia were evaluated by asking: "What is anemia?" (open-ended response), "How serious is anemia?" (scale response), and "For whom is anemia most serious?" (categorical response).



Image 1. People working in the fields of the Bolivian *altiplano*.

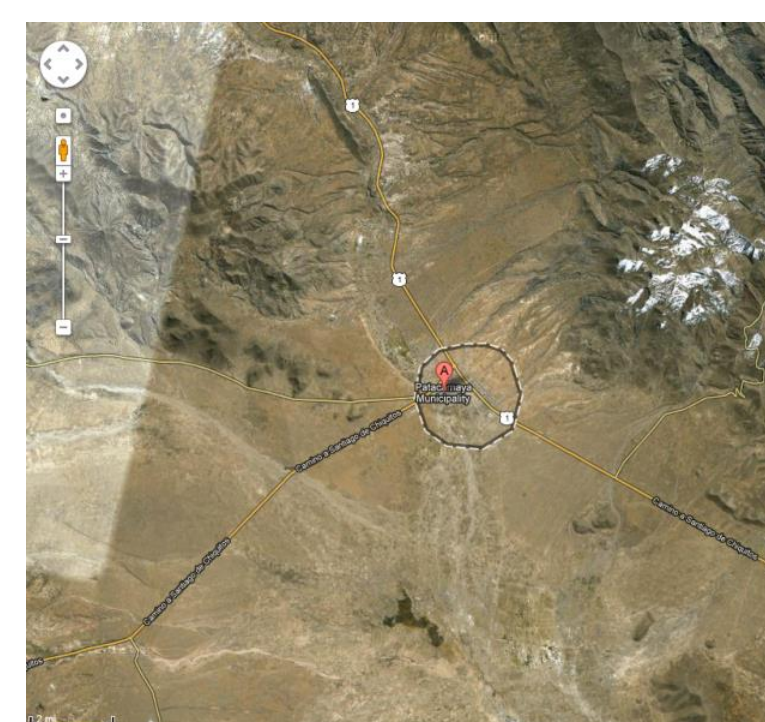


Image 2. A satellite image of Patacamaya & surrounding rural communities. Many women must walk the distance from the edge of this picture to reach the "town" and health post. (image is ~30km [18.5 miles] across)

## RESULTS

- **48% of the study participants are anemic** (Figure 1).
- **Of 80 anemic interview respondents, only 27 (34%) said they had tried to purchase iron supplement pills at the health post.**
- **36% of anemic women who took the pills did so for the recommended 3 months.**
- **Hypothesis 1: Beliefs regarding anemia may be influencing health care seeking behaviors.** Women who did and did not try to obtain the iron pills differed significantly ( $p=0.007$ ) in their answers to "What is anemia?" (e.g., women who tried to obtain the pills were more likely to associate anemia with lethargy while those who did not try to obtain pills were more likely to answer "Don't know." Figure 2).
- **Hypothesis 2: Proximity to town** significantly influences the probability that a woman will visit the health post to obtain iron pills (Figure 3). **Age** also significantly affects probability of obtaining iron pills, but only in women from communities nearer the town. Generally, women from rural communities and older women living nearer the town are the least likely visit the health post.
- **Hypothesis 3: The most common reasons for not going to the health post include:** not given a recommendation form (36%), does not have anemia (18%), and does not have time (18%). These responses do **not** significantly differ between anemic and non-anemic women (Figure 4).
- 40% of anemic women said they did not get a recommendation (though they did) and 17% said they do not have anemia or do not need the pills. 17% of anemic women and 17% of non-anemic women said they do not have time to go to the health post (Figure 4).

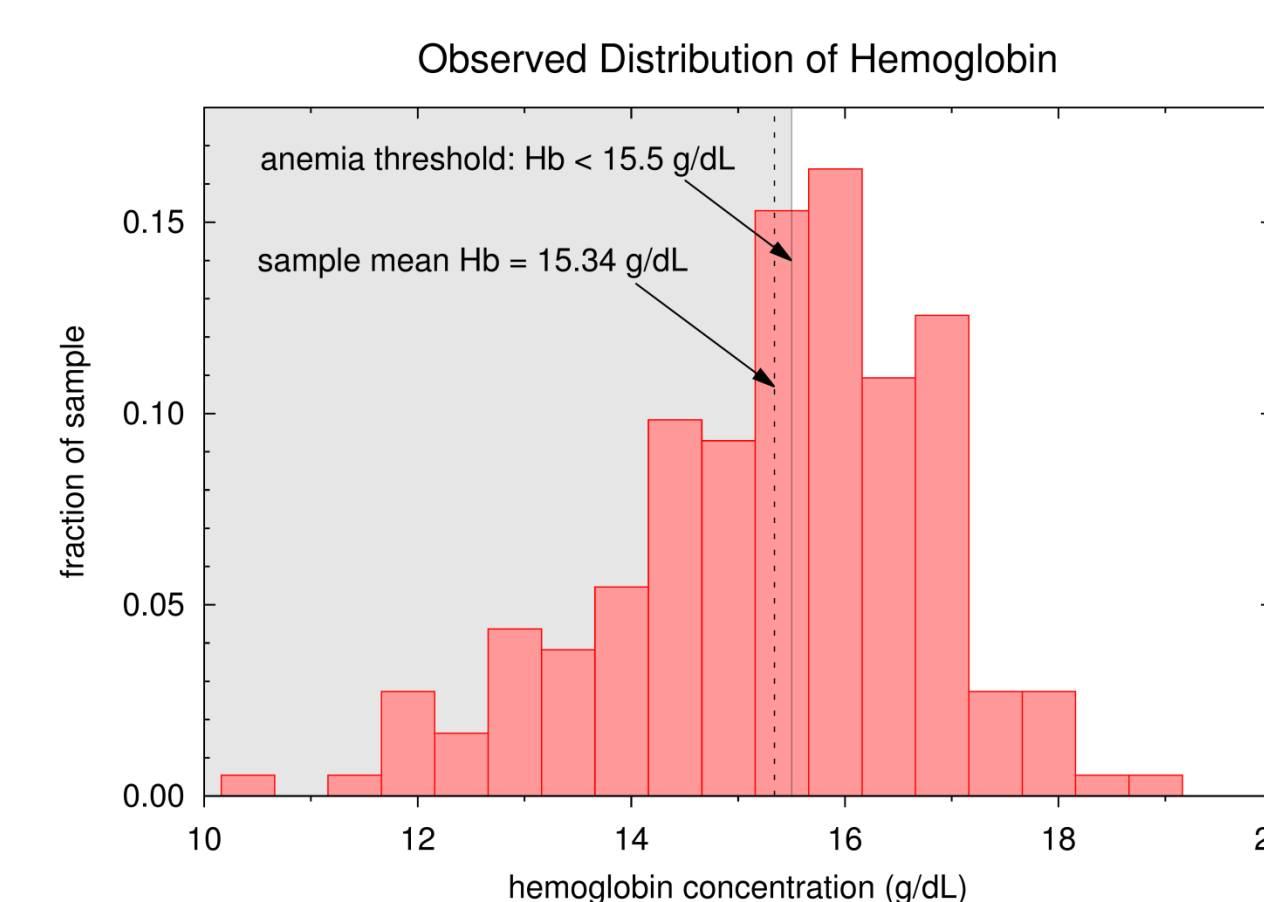


Figure 1. Distribution of hemoglobin measurements in this population.

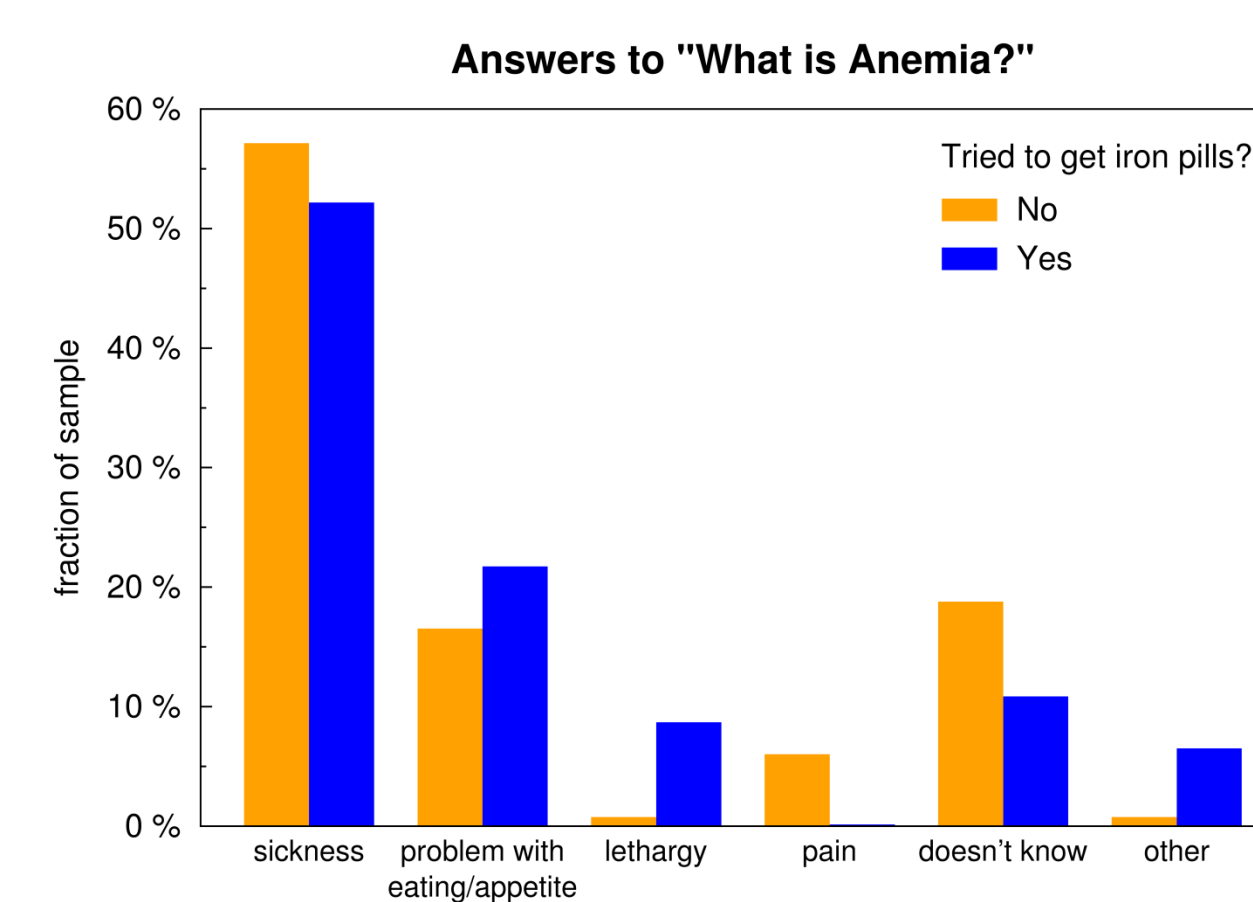


Figure 2. Most common explanations of anemia with a distinction between women who did and did not try to obtain pills.

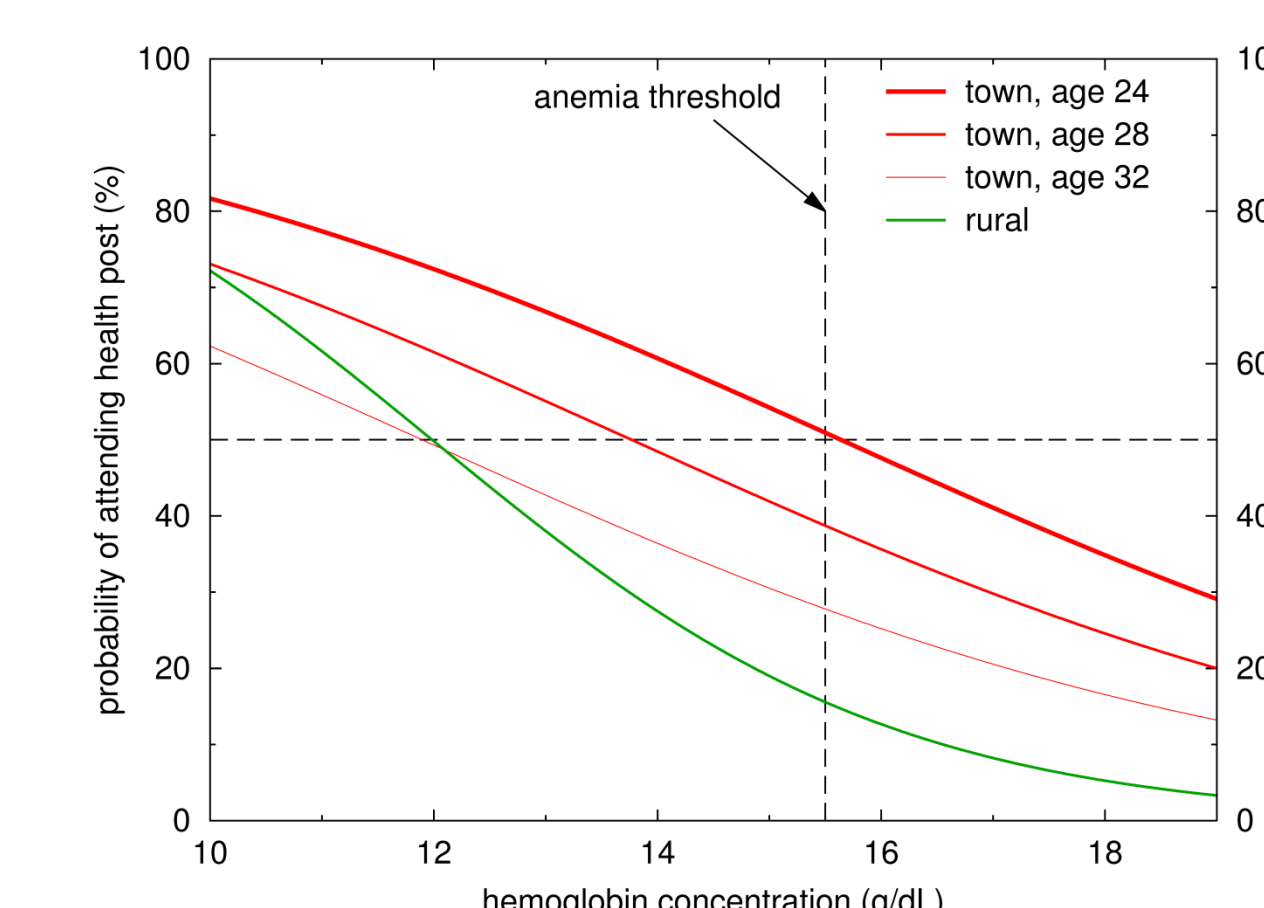


Figure 3. Hemoglobin concentration vs. the probability of attending the health post, also measuring age of "town" participants.

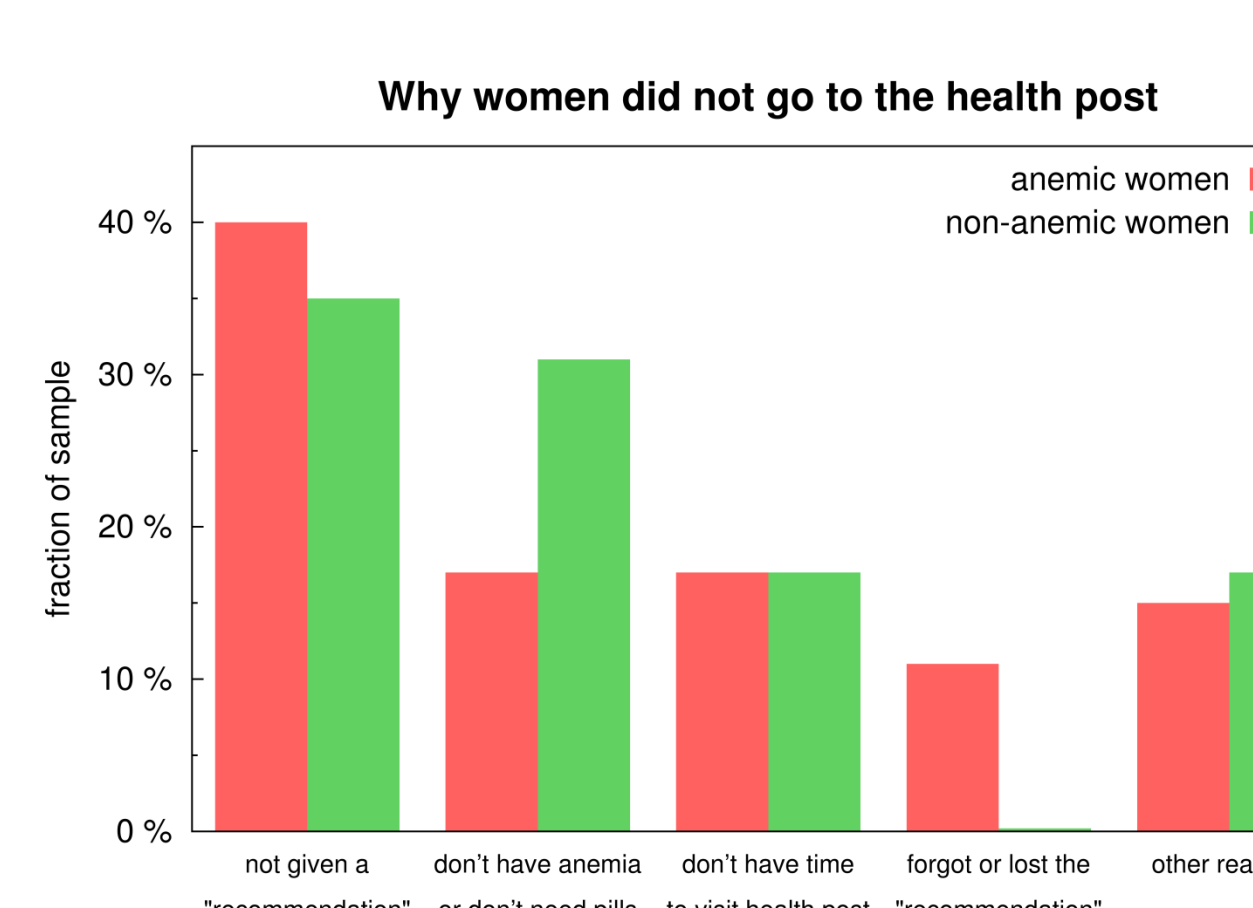


Figure 4. Most common reasons why women did not go to the health post with a distinction between anemic and non-anemic women.

### Conceptualizations of Anemia

Question	Answer 1	Answer 2	Answer 3
What is anemia?	sickness (43.3%)	problem with eating/appetite (20.8%)	do not know (19.9%)
How serious is anemia?	very serious (63.3%)	somewhat serious (26.0%)	not serious (9.5%)
For whom is anemia most serious?	women (58.8%)	everyone (18.1%)	babies (13.5%)

Table 1. Questions asked of the participants; answers 1-3 are the most common answers. There was no significant difference between the answers given by anemic and non-anemic women.

## CONCLUSION

- **The likelihood of a participant going to the health post is influenced by: hemoglobin concentration, her community's proximity to the health post, and her age for women living in or nearer the "town".**
- **Only 34% of anemic women attempted to obtain the pills.** In addition to proximity and anemia status, the reasons given by the women (anemic and non-anemic) for not obtaining the pills yielded a nuanced and complicated picture of the factors influencing health seeking behavior.
- The majority of participants' conceptualizations of anemia generally align with the biomedical understanding of anemia in what it is, in its seriousness, and that it is more prevalent in women. But **those who did not go to the health post are less likely to know what anemia is.**
- Answers given by anemic and non-anemic women as to why they did not go to the health post are not as different as would be expected. Perhaps women did not understand anemia or their own anemia status as well as interview answers appear to suggest or perhaps they were unwilling to go to the health post for some undisclosed reason. These factors may have contributed to the low rate at which pills were obtained by anemic women.
- More clearly, **the accessibility of health care is influencing women's health seeking behavior.** The opportunity costs of going to the health post appear to be very important in this population. Because the distance is often so great and the most common mode of transportation is walking, women seem to be less likely to go to the health post if they live in rural communities.
- Better health education seems unlikely to markedly reduce anemia in this region.
- More effective approaches might be decentralization of health care, having an ambulatory community health worker that would visit the rural communities, or involving local *curanderos*, or traditional healers, in the formal health care process.
- All these suggestions are not easy, but the issues must be viewed as challenges to be met rather than as insurmountable obstacles. Creative approaches to the unique conditions in this region of the world are needed and possible.

## FURTHER DIRECTIONS FOR RESEARCH

- It is unclear why age is significant for the probability that women who live in a town will go to the health post. It could be that younger women have higher Spanish-speaking skills, and thus are more able to communicate with health care providers. Or it could also be that younger women have fewer commitments and thus more time to go to the health post. This particular outcome needs more study.
- The reasons women give for not going to the health post raise other questions, such as "Why did 40% of anemic women who did not go say that they were not given a 'recommendation' when they were?" These questions might best be answered by interviewing a sample of the participants in depth about their experiences.
- It is unclear why 17% of non-anemic women responded that they did not have time to go to the health post, even though they did not need the pills. In-depth interviews might also answer this question.

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