Community Assessment of Resources and Healthcare Experiences in the Colca Valley (CARE III)

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Introduction/Background

The Colca Valley region of the Southern Andes is a vast area of natural resources and some of the highest summits in the world. The Colca Valley is located near the Colca River; and thus, provides rich land for agriculture. However, this area of Peru also has some of the greatest poverty and highest health disparities of the entire Andean region, (Valdivia, 2002). Most of the roughly 23,000 people living in this area live in a group of small communities within a 50km area, situated between 3-4K meters above sea level, (Wernke & Whitmore, 2009). The area has been examined extensively by historians, ecologists and anthropologists studying the Pre-Columbian era, due to its historical significance during the 15th and 16th centuries at the time of Spanish colonial rule in Peru. The Peruvian government captures census data for individual districts in the area, which are situated in the Caylloma Province within the Department of Arequipa (See Figure 1 for a map of the area). However, limited information exists about health care needs and utilization of health care services in the area.

Figure 1. *Map of Caylloma Province, Peru*
(Source: http://educasitios2009.educ.ar/aula26/tag/region-arequipa/)

Quechua Benefit, a multifaceted non-governmental organization (NGO) working in Peru for over 14 years, is considering plans to develop a clinic and health services center at their "Casa Chapi" property in the Colca Valley region. Before investing in the development of a sustainable clinic model, Quechua Benefit has requested the assistance of Health Bridges International (HBI) (a U.S. based NGO working in a wide range of areas in Peru) to conduct a survey of the Colca Valley to determine what organizations are working in the area, where people are receiving services, where the rural communities of the valley receive their water, electricity, and waste disposal, and finally a review of healthcare service access and utilization in the Valley. HBI and UNC Wilmington have been working together since 2009 and have jointly conducted prior community health needs assessment in both Arequipa and the Ancash regions of Peru.

Previous studies have demonstrated the need for more expanded primary and preventive healthcare services to impoverished and marginalized populations to improve health outcome

measures. Yet few studies have truly defined healthcare access and utilization trends among the rural poor of Latin America. While government census data collected for the area provides information about access to basic services such as water and electricity, no data has been collected in these communities about healthcare utilization patterns and barriers that prevent access to healthcare services. Even fewer studies are available to describe the challenges of "day-to-day" needs attainment for communities in isolated Andean villages. This study serves as the first known surveys of this population to identify their health care values, needs, utilization patterns or barriers to accessing healthcare.

Findings from this study will enable service delivery organizations and public policy groups to better assess the needs of those living in extreme poverty – and will ultimately make the largest impact on the health of people in the rural Andean region.

Purpose/Aims of the Study

This cross-sectional descriptive study was designed to evaluate healthcare access and utilization patterns as well as objective and subjective barriers to healthcare in a series of 14 communities outside of Colca Valley, Arequipa, Peru. More specifically, this study provides information regarding healthcare utilization patterns, and barriers that contribute to reduced access to care within the communities of the Colca Valley Region.

Hypothesis and Study Assumptions

The following hypotheses and assumptions guide this study:

1. Individuals living in the communities of Colca Valley do not have access to adequate primary and other healthcare services.
2. Healthcare utilization patterns reflect learned behaviors, and are based on lack of knowledge of available resources and a proper understanding of "primary care" as a longitudinal medical model.
3. A significant barrier to individuals seeking services is their lack of insurance and lack of knowledge regarding how to properly utilize free and low-cost healthcare options.

Research Questions

The following research questions are addressed in this study:

1. What are the living conditions of the people in the Colca Valley community, in terms of access to basic services such as water, sewage and electricity?
2. Do members of the community treat their water prior to consumption?
3. What is the demographic makeup of households in the Colca Valley (including size of household, income and education)?
4. What types of assistance (government or private) are households in Colca Valley receiving?
5. Where do individuals in Colca Valley seek healthcare, dental and eye care services?
6. How frequently are healthcare, dental, and eye care services accessed by members of the Colca Valley community?
7. What barriers exist to healthcare access and utilization in Colca Valley?
8. To what extent do individuals utilize folk, herbal or traditional remedies?
9. Do women report receiving prenatal care?
10. Do women utilize folk, herbal or traditional remedies during pregnancy?

Methods

Recruitment Methods

Participants were recruited within the fourteen communities being surveyed. Research staff canvassed the communities during daylight hours by going door-to-door, visiting local public areas and work fields within the communities, as well as working with local community officials to recruit participants for the study.

Human Subject Protections

Permission from the UNC Wilmington Institutional Review Board (IRB) was obtained prior to data collection for the study. Additionally, all study staff (including data collectors and interpreters) received prior training in non-leading interviewing techniques and IRB training. An introductory information sheet was read to all potential survey participants through a Spanish language interpreter (see Appendix B). Subjects in the region have generally low levels of literacy and thus will better understand a simple statement of voluntariness and anonymity that is read to them prior to initiating the survey. No personally identifiable data was collected as part of the survey.

Data Collection Methods

The survey instrument was administered in Spanish by research assistants who are fluent in Spanish and English. For research assistants needing translation services, a translator (fluent in Spanish and Quechua) was provided. Each community was only visited one time, with the exception of Yanque. Data collectors returned to Yanque a second time because of low numbers due to longer survey times the initial day of data collection activities.

Data Analysis

Surveys were numbered and free of any personally identifying information. The survey data were cleaned and examined for data entry error and compiled in Excel. A statistical analysis of the data was conducted using SPSS software for descriptive statistics and to examine associations between demographic information and patterns of healthcare access and utilization. When applicable, data collected in the study was compared to 2007 census data from the Peruvian government (http://desa.inei.gob.pe/censos2007/tabulados/).

Findings

Findings for this study are presented in this report: in aggregate for all communities surveyed; and by each individual community (Please see Appendix A). Additionally, when available, comparisons of descriptive statistics across individual communities are included. Individual community data can be found in Appendix F.

Study Sample

Household Size and Makeup

The sample for the study included 445 households. The average number of adult members in each household surveyed was 2.46 (SD=1.03, range=1-5), with more than half (53%) of households reporting two adults living in the home. The average number of children in each household was 1.89 (SD=1.35, range=0-7). Roughly 70% of households reported having two or

more children living in the home. These figures roughly coincide with 2010 national data, which reports an average household size of 4 persons (INEI, 2012). See Table 1 for study findings related to household demographic information. Table 2 and Table 3 display the distribution of adults and children living in the home.

Table 1. *Number of individuals in households and average age*

	Number	Minimum	Maximum	Mean	Std. Deviation
Adults	1017	17	110	43.02	14.34
Children	629	.021	18	8.25	5.26
Total	1646				

Table 2. *Distribution number of adults living in respondent home*

Adults in Home	Frequency	%	Cumulative Frequency	Cumulative %
One	52	11.69	52	11.69
Two	237	53.26	289	64.94
Three	87	19.55	376	84.49
Four	39	8.76	415	93.26
Five or more	30	6.74	445	100.00

Table 3. *Distribution of number of children living in respondent home*

Children in Home	Frequency	%	Cumulative Frequency	Cumulative %
One	88	29.73	88	29.73
Two	115	38.85	203	68.58
Three	54	18.24	257	86.82
Four	25	8.45	282	95.27
Five or more	14	4.73	296	100.00

Age of Adults and Children Among Households

The average reported age of adults living in households surveyed in the study was 43.02 (SD=14.34, range 17-110), with more than 70% of adults reported in the study as 49 years old or less (See Table 4). The average reported age of children was 8.25 (SD=5.26, range = .021-18). More than 60% of children reported in the study were less than ten years of age (See Table 5). Of households participating in the survey, households report more male children in the home than female children, which is interesting, given that the most recent national data indicates 97 males per female in the Arequipa department (INEI, 2012). Age ranges in the study sample were slightly higher than findings from national census data, which indicates that approximately 63% of the national population is between the ages of 15 and 64 (INEI, 2012).

Table 4. *Adult age distribution*

Age (years)	Frequency	%	Cumulative Frequency	Cumulative %
17 to 29	282	27.78	282	27.78
30 to 39	228	22.46	510	50.25
40 to 49	207	20.39	717	70.64
50 to 59	110	10.84	827	81.48
60 to 69	75	7.39	902	88.87
70 to 79	74	7.29	976	96.16
80 or Older	39	3.84	1015	100.00

Table 5. *Child age distribution*

Child's Age	Frequency	%	Cumulative Frequency	Cumulative %
18 Months or Less	87	13.83	87	13.83
Two to Four Years	110	17.49	197	31.32
Five to Ten Years	189	30.05	386	61.37
Ten to Eighteen Years	243	38.63	629	100.00

Language Spoken in the Home

Data related to language spoken in the home was missing from roughly two thirds of respondents. However, of respondents answering which language was the primary language spoken in the home, almost half (48.1%, n=214) indicated Spanish as the primary language spoken in the home, with 28% of respondents (n=84) indicating that Quechua was the primary language spoken in the home.

Table 6. Primary Language spoken in the household

		Frequency	%	Valid %	Cumulative %
Valid	Spanish	214	48.10	71.30	71.30
	Quechua	84	18.90	28.00	99.30
	Other	1	.20	.30	99.70
	Multiple	1	.20	.30	100.00
	Total	300	67.40	100.00	
Missing	System	145	32.60		
Total		445	100.00		

Educational Attainment

Of reporting households, 13.32% (n=150) of adults reported having no formal education, 34.42% of adults (n=379) had completed primary education, and 37.97% of adults reported having completed education to the secondary level (n=418). Another 13.62% (n=154) reported having attended University. Figure 2 demonstrates the distribution of educational levels

achieved by adults as reported in the study. A majority of (78.7%) household respondents indicated having children in the home who were attending school, suggesting that most of the school age children attend school.

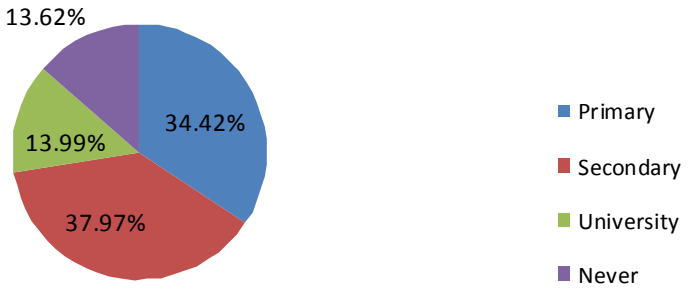

Figure 2. *Highest educational level of adults in household*

Household Income

Collecting household income in these communities is especially difficult, given that many individuals work in the informal sector, in agricultural and day labor jobs. In addition, household income is likely to fluctuate and therefore not be consistent, further complicating efforts to capture household income. Given the average number of adults reported in the household, income was calculated based on reported income from the first two adults listed in the household. Table 7 lists reported income as reported daily, weekly and monthly.

Table 7. *Income (in Soles) per adult in household*

	Daily	**Weekly**	**Monthly**
Adult 1	0-500 (M=25.59, SD=41.67)	10-600 (M= 139.85, SD=125.78)	20-2500 (M=555.12, SD=423.28)
Adult 2	0-6000 (M=149.16, SD= 640.68)	20-5000 (M=518.67, SD=1264.26)	0-8000 (M=590.65, SD=1103.36)

Access to Basic Services

Most households reported having access to electricity in the home (93.65%, n=369). For those who did not, they reported using candles, small fires, or took electricity from neighbors. Most respondents indicated that they had access to running water (96.95%, n=382) (See Table 8). The majority of households reporting that they did not have water in the home indicated that they must rely on a public spigot (53.85%), a river or other natural water source (15.38%), or use a well (7.69%). (Please see Table 9).

A majority of respondents (70.05%, n=276) indicated that they treated their water prior to consumption. The predominant method used was boiling, with 87.88% indicating that they boiled water prior to use. Other methods used to treat water included bleach (4.38%) or filtering (.34%). Use of other methods to treat water was reported by 7.41% of respondents (n=22). (See Table 10 for water treatment methods information). However, when asked about consistency of

treating water prior to drinking, much fewer (47.8%, n=185) reported that they always treated prior to drinking; 25.84% (n= 100) reported sometimes treating water prior to drinking, and 26.36% (n=102) never treated water prior to drinking (Please see Table 11).

Table 8. *Frequency of access to running water in households*

	Frequency	%
Yes	382	96.95
No	12	3.05
Total	394	100.00

Table 9. *Source of water among households without running water*

	Frequency	%
Public Spigot	19	40.40
Well	6	12.80
River or other natural source	2	4.30
Purchase Water	16	34.00
Other	4	8.50
Total	47	100.00

Table 10. *Household water treatment, frequency and methods used*

	Frequency	%
Do you treat water?		
No	118	29.95
Yes	276	70.05
Method of Water Treatment		
Boil	261	87.88
Filter	1	.34
Bleach	13	4.38
Other	22	7.41
Total	297	100.00

Table 11. *Frequency of treatment of water prior to consumption*

	Frequency	%
Always	185	47.80
Sometimes	100	25.84
Never	102	26.36
Total	387	100.00

Bathroom Facilities

The majority of respondents (79.95%, n=315) reported having a flushable commode in their home. Of those who did not, 37.3% (n=47) reported that they went to the bathroom inside the house and 19.84% (n=25) reported going outside the home. When asked about specific types of facilities used, 29.37% (n=37) indicated they utilized a hole; 12.7% (n=16) used a silo or latrine; and one respondent indicated using a ravine. See Table 12.

Table 12. *Household practices*

	Frequency	%
Do you have flushable commode in your home?		
Yes	315	79.95
No	79	20.05
Total	394	100.00
If no, where does your family use the bathroom?		
Outside	25	19.84
Inside	47	37.30
Silo/Latrine	16	12.70
Hole	37	29.37
Ravine	1	.79
Total	126	100.00
Where do you typically bathe?		
Outside	261	67.44
Inside	117	30.23
Both	9	2.33
Total	387	100.00
If outside, where?		
River or other natural source	31	11.52
Home Spigot	91	33.83
Hot Springs	129	47.96
Where do you typically prepare food?		
Outside	58	15.10
Inside	324	84.38
Both	2	.52
Total	384	100.00
Method used?		
Gas	182	46.91

	Frequency	%
Do you have flushable commode in your home?		
Yes	315	79.95
No	79	20.05
Other	206	53.09
Total	388	100.00

Bathing and Showering

A majority of respondents (67.44%, n=261) indicated that they typically bathed outside, with 2.33% (n=9) indicating that they bathed both inside and outside. When asked about specific types of facilities used for bathing, 47.96% of those who did so outside used hot springs (followed by a home spigot, and then a river or other natural source). See Table 12 for frequency and distribution of types of facilities used for bathing.

Cooking Methods

Most respondents (84.38%, n= 324) indicated cooking indoors, with 46.91% indicating using gas for cooking. While other methods and materials used for cooking were not specifically indicated on the survey, more than half of respondents indicated using a method other than gas for cooking.

Public or Other Assistance

Surprisingly, 71.83% (n=274) of respondents indicated receiving healthcare benefits from Seguro Integral de Salud (SIS), a healthcare program under the Ministry of Health (MINSA), which provides healthcare services to Peruvian citizens living in poverty or extreme poverty regardless of age. This finding is higher than government statistics for the Arequipa department - which estimate coverage at 65% (INEI, 2012).

When asked about how important being enrolled in SIS was to them and their family, 86.28% of respondents (n=327) indicated that being enrolled in SIS was either important or very important to them. However, just over 12% of respondents reported either not thinking about it or that being enrolled in SIS was either only slightly or not important to them. Of those respondents who were asked whether they would take the time to utilize help if it was made available to them to assist in enrolling in SIS, 92.92% (n=105) said yes.

Of those who did not receive SIS benefits, many did not for unstated reasons (62.79%). Of respondents, 15.12% (n=387) did not know where/how to sign up; 11.63% did not understand eligibility; 6.98% did not know what SIS was, and 3.49% had been told previously that they were not eligible. (See Table 13).

Table 13. *Participation in the Seguro Integral de Salud (SIS) Program*

Currently Enrolled?	Frequency	%
No	109	28.17
Yes	278	71.83
Total	387	100.00
If no, Why Not?		
Told not eligible	3	2.60
Do not know what it is	32	28.10
Do not know where/how to sign up	14	12.30
No Transportation	1	0.90
Do not understand eligibility	10	8.80
Other	54	47.40
Total	114	100.00

Healthcare Access and Utilization Patterns

Importance of Healthcare

Most (45.29%, n=178) of the participants responding to the survey indicated that health care was important to their families; 34.35% (n=135) stated it was very important; 16.03% (n=63) said it was somewhat important; and 4.07% (n=16) indicated that healthcare was not important (see Table 14).

Table 14. *Family Evaluation of Healthcare Importance*

Level of importance	Frequency	%
Very important	135	34.35
Important	178	45.29
Somewhat important	63	16.03
Not important	16	4.07
Other	1	.25
Total	387	100.00

Access and Utilization of Healthcare

Most respondents (96.64%, n=371) indicated that both they and their children were able to see a doctor or healthcare provider when they got sick. Similarly, 96.97% (n=256) indicated that their children were able to see a doctor or other healthcare provider when they were sick (See table 15). Despite the overwhelming number of respondents indicating that they were able to see a healthcare provider when sick, more than half of adult respondents (64.94%, n=250) indicated that they had needed to see a provider and were not able to go on at least one occasion. Data on children needing to see a provider and not being able to was not captured during data collection activities.

Table 15. *Health care access*

	Adults		Children	
Able to visit provider when sick?	**n**	**%**	**n**	**%**
Yes	371	96.64	261	96.97
No	21	5.36	8	3.03
Total	392	100.00	269	100.00

Reasons for Not Accessing Healthcare Services

Of those indicating they were not able to access healthcare services when needed, 26.23% of respondents indicated that money was the primary reason for not accessing healthcare services. While other options, such as transportation, childcare, trust issues or prior unfavorable experiences were provided as selection options, more than half of the respondents (50.82%, n=124) indicated other reasons for not accessing services. See Table 16 for a list of reasons described by those not seeking care for adults and Table 17, children.

Table 16. *Reasons for adults not receiving/seeking care*

	Frequency	%	Cumulative Frequency	Cumulative %
Money, could not afford	64	26.23	64	26.23
No time (busy schedule)	19	7.79	83	34.02
No transportation	6	2.46	89	36.48
Distance to clinic	2	0.82	91	37.30
Did not know where to go	1	0.41	92	37.70
No child care	1	0.41	93	38.11
Did not know where to go for health care	3	1.23	96	39.34
Did not trust the healthcare system	17	6.97	113	46.31
Had a previous experience that was unfavorable	7	2.87	120	49.18
Other	124	50.82	244	100.00

Table 17. *Reasons for children not receiving/seeking care*

	Frequency	%
Money, could not afford	4	23.50
No transportation	2	11.80
Distance to clinic	2	11.80
Did not know where to go	3	17.60
Other	6	35.30
Total		100.00

When asked about frequency of use of healthcare services, just under half (48.8%, n=183) indicated that they visited a healthcare provider less than once per year. Just over one third

(36%, n=135) indicated going to see a healthcare provider between one and three times per year. Roughly 15% reported having visited a healthcare provider more than four times per year (See Table 18). Insufficient data was captured to assess frequency of children visiting healthcare services.

Table 18. *Healthcare utilization adults*

	Frequency	%
Less than once per year	135	34.35
One to three times per year	178	45.29
Four to ten per year	63	16.03
More than ten times per year	16	4.07
Total	392	100.00

Referral to Other Locations

More than half (53.42%, n=203) of household respondents indicated that they had been referred to Arequipa or Lima for additional specialty care. Of these, 79.31% reported ending up going to seek care. Of those who reported reasons why they did not go, 84% (n=21) stated it was because they could not afford to go. Other reasons for not going included time, transportation, or other reasons (See Table 19).

Table 19. *Referral for Care to Lima or Arequipa*

	Frequency	%
Ever Referred?		
Yes	203	53.42
No	177	46.58
Total	380	100.00
End up going?		
Yes	115	79.31
No	30	20.69
Total	145	100.00
If no, Why not?		
Money	21	84
Time	1	4
Transportation	1	4
Other	2	8
Total	25	100.00

Types of Clinics Used for Healthcare

Most respondents indicated that both they (85.01%) and their children (91.01) visited a MINSA clinic when ill. The remainder reported visiting EsSalud facilities, a regional Hospital, private clinic or visited another, unspecified location (See Table 20). Adults reported being more likely to visit EsSalud facilities or regional hospital for care.

Table 20. *Location of Visit for Adult Healthcare*

	Adults		Children	
	n	%	n	%
MINSA	346	85.01	243	91.01
EsSalud	20	4.90	5	1.87
Regional Hospital	22	5.40	9	3.37
Private Clinic	11	2.70	2	.75
Other	8	2.00	8	3.00
Total	407	100.00	247	100.00

Emergency Care

Virtually all respondents indicated knowing where to go for emergency care. When asked where they would go for emergency care, 57.1% (n=201) indicated they would go to the health post; 24.72% (n=87) would go to the hospital; and 13.92% (n=49) said they would go to the clinic (Please see Table 21).

Table 21. *Emergency care services*

Would know where to go in an emergency?		
	n	%
Yes	385	94.40
No	23	5.60
Total	408	100.00
Where would you go?		
Hospital	87	24.40
Clinic	49	13.70
Health Post	206	57.70
Pharmacy	1	.30
Other	5	1.40
Multiple places	9	2.50
Total	357	100.00

Use of Traditional Healers, Teas, Herbs and Other Remedies

Respondents overwhelmingly indicated use of home remedies such as teas, herbs or visiting traditional healers (92.9%). Of these, 72.6% used multiple types of home or herbal remedies, followed by 13.4% using only herbs, and 10.5% using only medicinal teas (Please see Table 22 for full break down of reported types of these remedies).

Table 22. *Use of traditional healers, teas and herbs*

When sick, use of teas, herbs or healers?	**n**	**%**
Yes	407	92.90
No	31	7.10
Total	438	100.00
Types Used?	**Frequency**	**%**
Medicinal Tea	43	10.51
Pharmacist	6	1.50
Herbs	55	13.44
Coca Leaves	2	0.50
All of the above	3	0.73
Multiple Types	297	72.61
Traditional Healers	3	0.73
Total	409	100.00

Methods of Travel When Seeking Healthcare Services

Most respondents (87.89%) indicated that they walked when visiting clinics (n=338). Another 11.95% indicated that they paid for transportation to the clinic (Please see Table 23). The average reported length of time to the clinic was 43.7 minutes.

Table 23. *Method of travel to the clinic*

	Frequency	**%**
Walk	338	87.79
Pay for Transportation	46	11.95
Other	1	.26
Total	385	100.00

Costs of Healthcare

Respondents were asked on average how much they paid when accessing healthcare services. While most respondents (47.33%) indicated they did not pay for services, 38.77% indicated they paid between 1 and 10 soles. Another 11.76% indicated paying between 11 and 50 soles, and 2.14% reported paying more than 50 soles (please see Table 24).

Table 24. *Price paid (Soles) for healthcare services*

	Frequency	**%**
Did Not Pay	177	47.33
1 to 10 Soles	145	38.77
11 to 50 Soles	44	11.76
50+ soles	8	2.14
Total	374	100.00

Dental Care Utilization

Among participants responding to the survey, 48.97% indicated dental care was very important to their family. More than half of adult respondents (59.84%, n=231) indicated that they received dental care. When asked about frequency of use of dental services, 49.87% (n=197) of respondents indicated that they went less than once per year to see the dentist; 24.81% (n=197) reported accessing dental services annually. Another 22.03% (n=87) reported accessing dental services between one and four times per year, and 3.29% (n=13) reported having accessed dental services five or more times per year.

The percentage of children receiving dental care was higher than that reported by adults participating in the survey. Study findings indicate that higher percentages (62.31%) of children accessed dental services as compared to adult respondents; however, reported utilization patterns of dental care for children indicated that 61.27% of children accessed dental care less than once per year. According to adult respondents (n=253), 94.05% indicated that their children had toothbrushes. See Table 25 for reported access to dental services and utilization of dental care.

Table 25. *Dental care access*

	Adults		Children	
	Frequency	**%**	**Frequency**	**%**
		Receive Dental Care?		
Yes	231	59.84	162	62.31
No	155	40.16	98	37.69
Total	386	100.00	260	100.00
		Frequency of Care:		
Less than 1x/year	197	49.87	242	61.27
Once/year	98	24.81	75	18.99
1-4x/year	87	22.03	62	15.70
5+ times/year	13	3.29	16	4.05
Total	395	100.00	395	100.00

Eye Care Utilization

More than half of adult respondents (54%, n=209) indicated that eye care was very important to them and their families, however, only 39.48% (n=152) reported having ever seen a doctor who specialized in eyes. Table 26 displays responses about value of eye care services to the respondents surveyed in the study.

Table 26. *Eye care utilization*

How important is eye care to you and your family?	**Frequency**	**%**
Very Important	209	54.29
Important	158	41.04
Somewhat Important	8	2.08
Not Important	10	2.60

Total	385	100.00
Have you ever seen a doctor who specializes in eyes?		
Yes	152	39.48
No	233	60.52
Total	385	100.00

Prescription Access

More than half of adult household respondents (56.77%, n=218) indicated that they had been prescribed medication that they had been unable to fill, with economic resources being the primary reason (71.71%, n=147) for not filling the prescription (See Table 27). Another 9.27% of respondents indicated that they had started to feel better and decided not to buy the medication, and 11.22% had other options listed on the survey instrument. See Table 28 for identified barriers to prescription access.

Table 27. *Prescription access*

	Frequency	%
Able to afford to fill prescription?		
Yes	218	56.77
No	166	43.23
Total	384	100.00

Table 28. *Barriers to prescription access*

	n	%
Money, cannot afford	147	71.71
No Transportation	1	.49
Felt better, decided not to buy	19	9.27
Don't like taking medications	14	6.83
Don't know where to go	1	.49
Other	23	11.22
Total	205	100.00

Pregnancy and Access to Prenatal Care

Female respondents (n=186) were asked additional specific questions about pregnancy, use of prenatal services, and use of traditional healing therapies during pregnancy. Of women respondents who had been pregnant, a majority (58.06%, n= 137) reported that they had been pregnant between two and four times; 24.73% (n=46) reported having been pregnant five to ten times. As a proxy measure to identify live birth/child survival data, respondents were also asked how many children they had. More than half (61.29%, n=114) reported having between two to four children, and 18.82% (n= 35) had five to eight children. See Table 29 for reported frequency of pregnancy among female respondents.

When asked whether they knew where to access prenatal services by an obstetrician or midwife, 78.07% (n=146) of female respondents knew where to go to see an obstetrician, midwife, or OB/GYN. Slightly fewer, (76.4%, n= 136) however, reported that they had seen a healthcare provider before the baby was born. See Table 29 for data on reported pregnancies and accessing prenatal care.

Table 29. *Frequency of pregnancy among female respondents and prenatal care access*

	Frequency	%
How many times pregnant?		
Once	29	15.59
2-4 times	108	58.06
5-10 times	46	24.73
More than 10 times	3	1.61
Total	186	100.00
Number of Children		
One	33	17.74
Two to Four	114	61.29
Five to Eight	35	18.82
Nine or More	4	2.15
Total	186	100.00
Do you know where to see healthcare providers?		
Yes	146	78.07
No	38	20.32
Total	184	100.00
During any pregnancies, did you see a health care provider before the baby was born?		
Yes	139	76.80
No	42	23.20
Total	181	100.00

Types of Clinics Used for Prenatal Care

Female respondents were asked where they sought prenatal care services. Most respondents (83.84%, n=115) indicated that they sought care at a MINSA clinic, with 10.95% (n=15) reporting seeking care at the hospital. Only 3.65% indicated seeking care at a private clinic and none reported visiting a midwife for prenatal care services. See Table 30 for types of locations for seeking care during pregnancy.

***Table 30**. Type of locations for seeking care during pregnancy*

	Frequency	%
MINSA	115	83.84
EsSalud	2	1.46
Hospital	15	10.95
Private Clinic	5	3.65
Pharmacy	0	0
Midwife	0	0
Total responses	137	100.00

Barriers to Prenatal Care Access

A majority of female respondents (55.82%) indicated that the lack of healthcare providers being available was their reason for not seeking care during pregnancy. Other reported barriers included the distance to the clinic (23.26 %,); lack of childcare (9.30%) and either not knowing where to go, or that they even needed to seek care (Pleas see Table 31).

***Table 31.** Barriers to accessing care during pregnancy*

	Frequency	%
Transportation	0	0
Could not afford	1	2.33
No Child Care	4	9.30
Did Not Need Healthcare	1	2.33
No Health Care Providers Available	24	55.82
Did Not Know Where to Go	3	7.00
Distance to clinic	10	23.26
Total Reported	43	100.00

Use of Prenatal Vitamins During Pregnancy

A majority (57.5%) of female respondents reported that they did not take prenatal vitamins during pregnancy. When asked why they did not take prenatal vitamins, over half of respondents indicated that they did not know they needed them. Other reasons for not taking prenatal vitamins included not liking taking medications (28.10%) or not knowing where to go to get prenatal vitamins (9.76%). See Table 32 and Table 33 for information about reported use of prenatal vitamins during pregnancy.

***Table 32.** Women reporting taking prenatal vitamins during pregnancy*

	Frequency	%
Yes	79	42.5
No	107	57.5
Total	186	100.00

Table 33. *Reasons for not taking prenatal vitamins during pregnancy*

	Frequency	%
Did Not Know They Needed Them	45	54.88
Could Not Afford	4	4.88
No Transportation	2	2.44
Do Not Like Taking Medications	23	28.10
Do Not Know Where to Go For Prescriptions	8	9.76
Total	82	100.00

Use of Traditional Therapies and Vitamins During Pregnancy

Of female respondents indicating they had been pregnant, 100% reported using teas, herbs, or other natural remedies. Sixty-four women reported not using any non-traditional remedies.

Table 34. *Use of teas, herbs, or other natural remedies during pregnancy*

	Frequency	%
Medicinal Teas	78	32.37
Traditional Healers	25	10.37
Herbs or Medicinal Plants	82	34.02
Coca Leaves	56	23.24

Comparison Data Across Communities Surveyed in the Study

According to government census statistics, the communities surveyed in the study range in population from approximately 700 individuals living in Madrigal to more than six thousand living in Chivay, the largest community in the Colca region. No population data is available on the communities of Pincholla and Canacota. See Figure 3 for available population data for the communities surveyed.

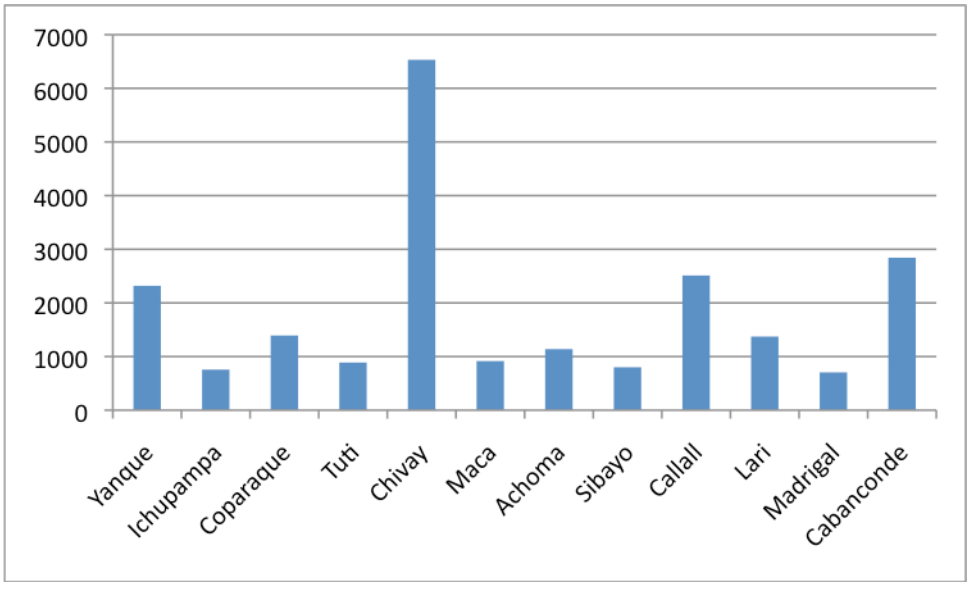

Figure 3 *Population estimates of communities surveyed (INEI, 2012)*

Household Demographics

Some variations existed in household sizes across communities in terms of numbers of children and adults in households (See Figure 4). Additional variations of language spoken in the home were also found across communities, with only Canacota having a higher percentage of households reporting speaking Quechua more frequently than Spanish (See Figure 5). Statistical significance of these findings was not analyzed.

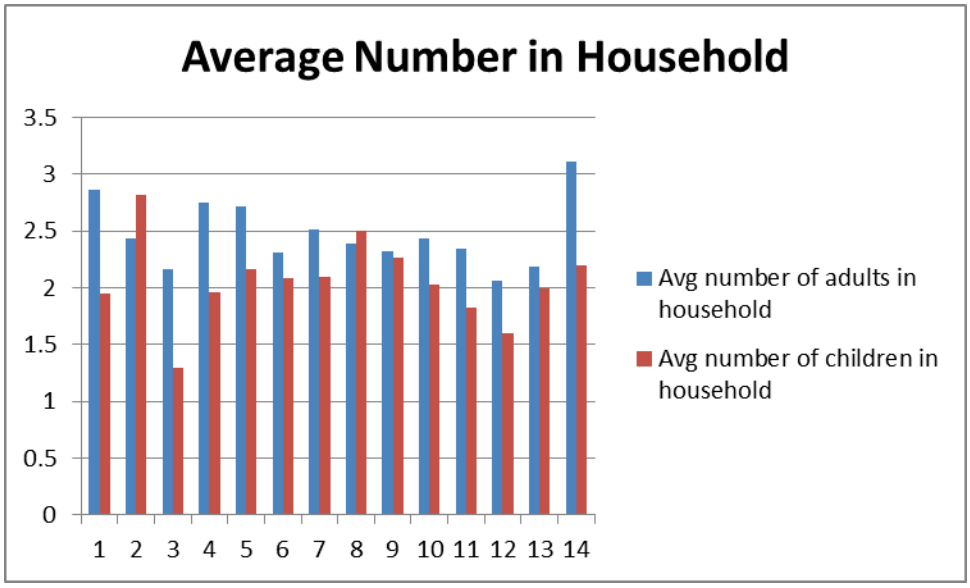

Figure 4. *Reported number in household across communities surveyed*

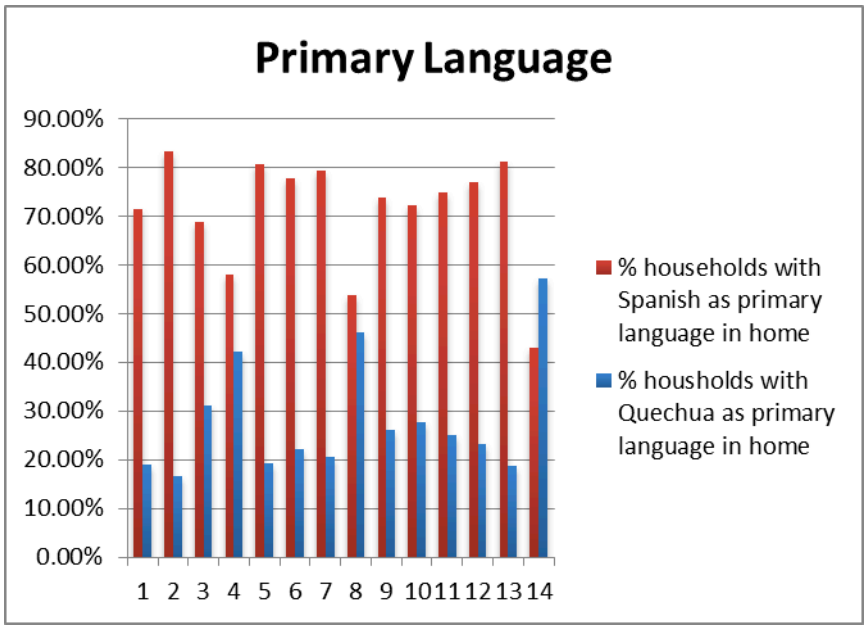

Figure 5. *Language spoken in home across communities surveyed*

Access to Basic Services

Households across communities reported similar rates of access to running water and electricity with the exception of Tuti, in which respondents indicated lower rates of household access to water and electricity, while reporting higher rates of flushable commode in home. These findings may be erroneous, but warrant further investigation. Wide variations among households reporting use of gas for cooking was found. Additionally, variations in reported methods used to treat water were found across communities, with boiling being the predominant method used to treat water prior to consumption. See Appendix C for graphs on household domicile information across communities.

Public Assistance

Variations were found of reported household use of public assistance (SIS) across communities surveyed in the study. See Figure 6 for data on households reporting receiving SIS benefits and Figure 7 for data on reported children in household receiving public assistance across communities.

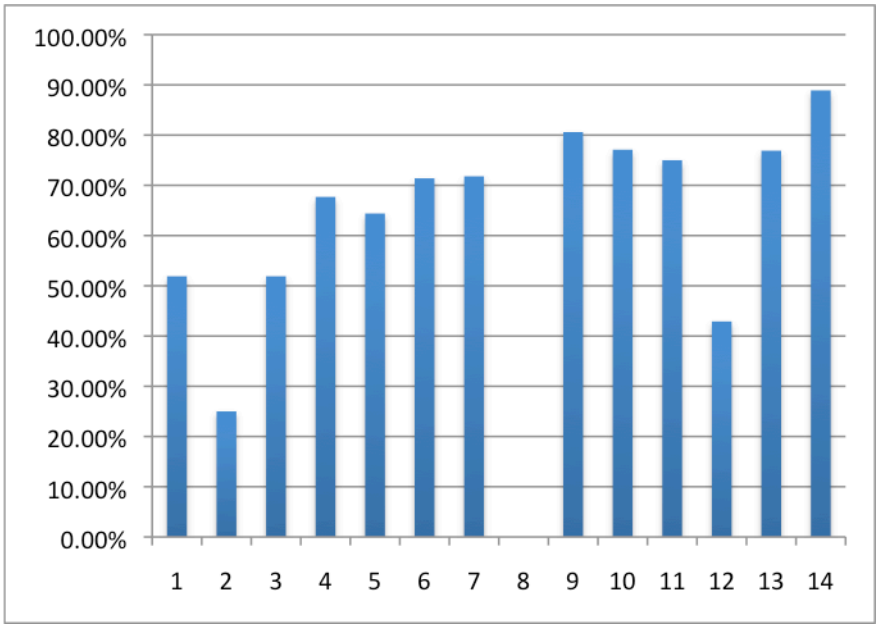

Figure 6. *Percent of households reporting receiving SIS*

1-Yanque; 2-Ichupampa; 3-Coparaque; 4-Tuti; 5-Chivay; 6-Maca; 7-Achoma; 8-Sibayo; 9-Callalli; 10-Lari; 11-Madrigal; 12-Cabanconde; 13-Pinchollo; 14-Canacota

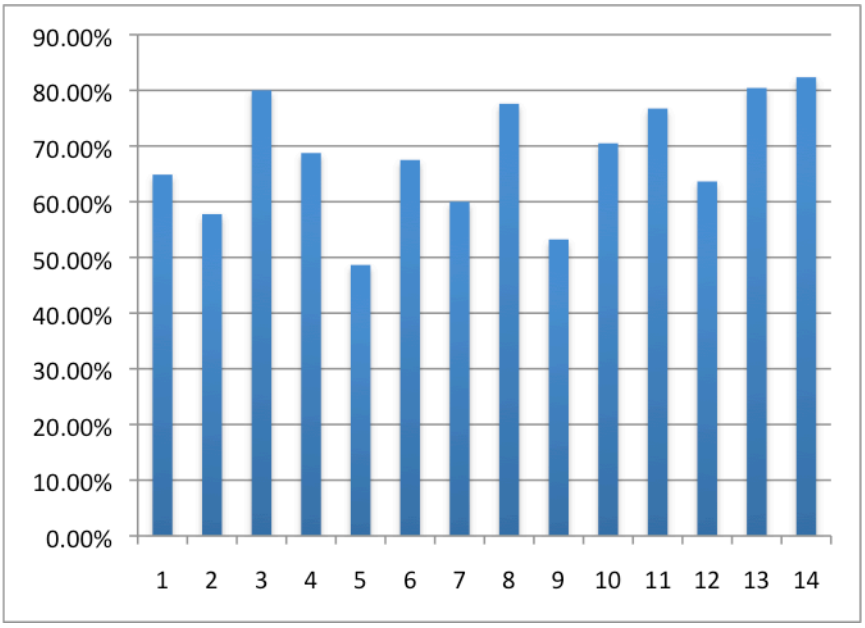

Figure 7. *Percent of households reporting children receiving assistance*

1-Yanque; 2-Ichupampa; 3-Coparaque; 4-Tuti; 5-Chivay; 6-Maca; 7-Achoma; 8-Sibayo; 9-Callalli; 10-Lari; 11-Madrigal; 12-Cabanconde; 13-Pinchollo; 14-Canacota

Healthcare Utilization Across Communities Surveyed

Healthcare utilization pattern showed high variation across communities surveyed in the study, with lower reported numbers of times visiting a healthcare provider in the communities of Corporaque and Tuti, and higher frequency of reported visits in Achoma and Pinchollo. Among reported frequency of visits to healthcare providers by children, besides being higher than the reported number of times adults reported going to visit a healthcare provider, the community of Maca had the highest reported frequency of visits by children; 2 to 3 times higher than other communities.

Variations also existed in costs of accessing care across communities, ranging from an average reported cost of 2.2 Soles in Maca to 22.5 Soles in Yanque (See Figure 7).

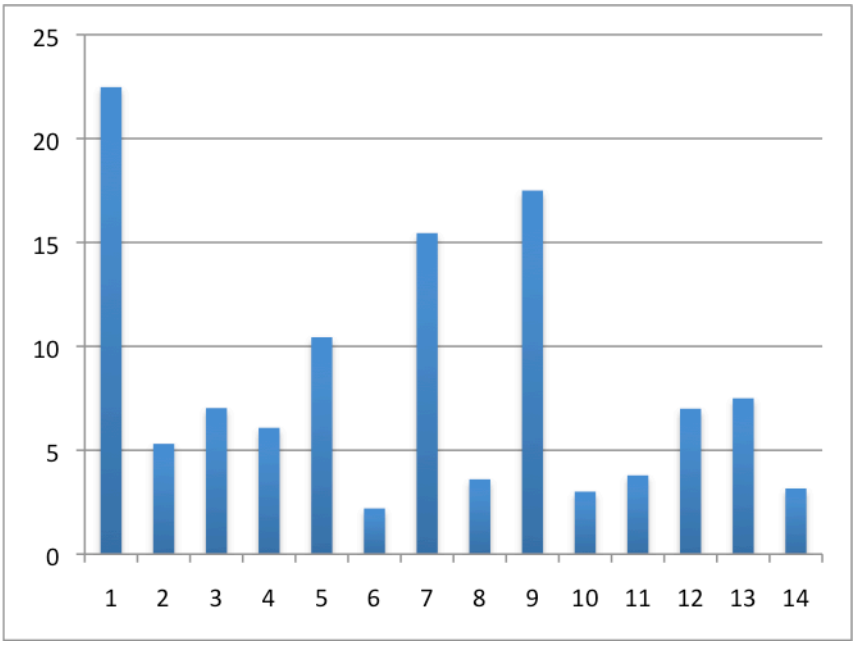

Figure 8. *Average reported cost of healthcare (Soles) across communities*

1-Yanque; 2-Ichupampa; 3-Coparaque; 4-Tuti; 5-Chivay; 6-Maca; 7-Achoma; 8-Sibayo; 9-Callalli; 10-Lari; 11-Madrigal; 12-Cabanconde; 13-Pinchollo; 14-Canacota

Dental Care Access Across Communities

Reported frequency of dental care access also varied across communities, with higher frequency being reported in Yanque and Achoma. The lowest reported frequency of dental care access was reported in Callalli. The percentage of respondents indicating that their children had toothbrushes ranged from 59.3% in Tuti to 100% in Inchupampa, Pinchollo and Canacota. See Appendix D for graphs of healthcare utilization patterns across communities surveyed.

Prenatal Care Practices Across Communities

Among female respondents, individuals in Pinchollo were least likely to report that they knew where to go to see an obstetrician or midwife. The percentage of women reporting having seen a provider before the baby was born ranged from 50% in Tuti to 100% in Yanque. Females in Yanque and Ichupampa were more likely to report going to a MINSA clinic for obstetric care. The percentage of women reporting taking prenatal vitamins during any of their pregnancies ranged from 12.5% in Cabacanonde to 100% in Yanque. See Appendix E for graphs depicting findings related to prenatal care access.

Limitations

As with any study, limitations exist to prevent generalization of the study findings. Limitations of this study include limited sample size and use of a convenience sample. Given estimated population data on these communities, sample sizes of each community surveyed in the study are comparatively small, providing limited power and generalizability of the findings. A large number of variables included missing data, also limiting analysis. Survey data collection errors along with limitations in the instrument used to capture data are also likely. Furthermore, possibilities for measurement error also exist, since an interpreter was used to administer the

survey. Furthermore, respondents may not completely have understood questions being asked of them, given culturally different conceptualizations of health, health seeking behaviors and health care utilization. These findings cannot be generalized to other communities within Arequipa or other areas of Peru.

Discussion and Recommendations

Findings from this study indicate a need for additional access to basic public health services such as clean water and sewer for individuals and families living in the Colca Valley Community. Additionally, while a majority of respondents indicated that they treat their water prior to consumption; practices of treating water consistently were less widely reported (only 47% of respondents indicated consistently treating water). Thus health promotion and education programs, particularly related to hygiene and the need for adequacy and consistency in treating water are also warranted.

Findings from this study also demonstrate a need for additional primary health care, dental, ophthalmology and obstetric services in the Colca Valley region. While access to healthcare and dental services for children is better than for adults in the community, additional services are needed to promote better access to primary healthcare and, in particular, obstetric services. Given the Peruvian government's initiatives to improve maternal health and reduce infant mortality by encouraging women to access prenatal care services, findings from this study indicate that while women are indeed utilizing prenatal care services, however, more convenient access to these providers is needed.

Given the low-income status of the members of the community, financial constraints for accessing healthcare services are not surprising. Barriers to healthcare are evident, primarily related to poverty and lack of income. While a majority of respondents indicated that they did not pay for healthcare services, an overwhelming majority indicated costs as a primary barrier to accessing healthcare and other services.

Given the average reported income by households surveyed in this study, many of the households would be eligible for SIS program services as outlined in government enrollment eligibility data, but many reported either not knowing what SIS is (28.10%), eligibility requirements (8.8%) or where to sign up for SIS (12.30%). Interestingly, almost half of respondents indicated other reasons for not receiving SIS, which should be explored more fully in future studies. Support services that should be further explored include ways to address transportation needs, and health education programs to reduce lack of knowledge about available support programs and services, especially the SIS program. According to the 2007 National Census of Indigenous Peoples, 45.4%had no more than a first aid post (Amnesty International, 2009). This also seems to be the case in the Colca Valley community as well, although respondents reported knowing where to go for emergency services. Whether appropriate access to emergency care is available was not addressed in this study. Reported conditions for which community members seek care indicate that when care is sought, it is primarily episodic, and not preventative in nature. Other challenges in the area include lack of education among adults, and the presence of unstable and low wage employment.

Other household practices that might potentially have health impacts include findings that most respondents reported cooking inside, with roughly 47% reporting use of gas and a majority (53.09%) using other materials (likely wood). These household practices inform the need for health education programs to reduce risks associated with use of the materials, including the potential for health effects (from use of materials such as wood to cook). Future studies should include more detailed examination of these practices and their potential impact on health outcomes.

Future studies should further explore the presence of other barriers to healthcare access, especially related to health seeking behaviors, including issues of trust as a barrier to seeking care. Additionally, more information is needed as to whether current healthcare programs in the area are functioning at maximum capacity and what resources for these programs may be needed.

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Appendix

Please see the attached documents for expanded graphs, charts and reference materials.