Baseline Study for the Impact Evaluation of a Performance Based Financing (PBF) pilot in Tajikistan

January 2017

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Figures

Tables

Acronyms

Ministry of health	MOH
Adults equivalent	AE
Antenatal care	ANC
Citizen score cards	CSC
Collaborative quality improvement	CQI
Enumeration area	EA
Health house	HH
Health management information system	HMIS
Impact evaluation	IE
Integrated management of childhood illness	IMCI
Maternal and child health	MCH
Non-communicable disease	NCD
Performance based financing	PBF
Postnatal care	PNC
Primary health care	PHC
Principal component analysis	PCA
Rural health center	RHC
Tajikistan demographic and health survey	TjDHS

1. Survey Methodology

1.1 Study Objectives

The policy objective of the proposed Impact Evaluation (IE) is to build evidence on the impact and cost-effectiveness of the proposed performance based financing (PBF) project in Tajikistan. More specifically, the IE would seek to ascertain: (i) the impact and cost-effectiveness of the PBF model implemented in Tajikistan; and (ii) whether PBF is more effective or cost-effective if implemented in conjunction with additional low cost interventions (Collaborative Quality Improvement (CQI), Citizen Score Cards (CSC)). The results from the IE will help informing the Ministry of Health (MOH) on whether PBF should be scaled-up to additional primary health care (PHC) level institutions in other regions.

The *Collaborative Quality Improvement* intervention responds to policy concerns that performance incentives may not produce the desired improvements if providers lack the necessary competencies, data to inform decisions and knowledge. The *Citizen Report Card* attempts to improve the effectiveness of PBF by strengthening the 'short route of accountability', i.e., by increasing accountability of health facilities to their local constituents. Since PBF, collaborative quality improvement, and citizen score cards have never been implemented in large scale in Tajikistan, it is to be expected that the results from the IE will be useful for designing national PHC policy in Tajikistan, and that they will also contribute to the larger body of knowledge on these interventions.

1.2 Research Questions

The primary research questions dictating the design of the IE are:

1. What are the effects of PBF on the coverage/quality of targeted health services?
2. What are the incremental effects of CQI on the coverage/quality of targeted health services, relative to PBF?
3. What are the incremental effects of the Citizen Report Card on the coverage/quality of targeted health services relative to PBF?
4. What are the effects of CQI on the coverage/quality of targeted health services relative to business-as-usual?
5. What are the effects of the Citizen Report Card on the coverage/quality of targeted health services relative to business-as-usual?
6. What is the relative cost-effectiveness of PBF only relative to: (i) PBF + CQI; (ii) PBF + CSC; (iii) CQI only; (iv) CSC; and (v) Business-as-usual.

In addition to the six primary research question that focus on the impact of the different intervention on coverage quality and the relative cost effectiveness, the study will also attempt to answer the following questions:

1. <u>Health expenditure:</u> How do the different interventions affect households' health expenditure?
   1.1. What are the impacts of the interventions on informal charges for primary health care services?
   1.2. What are the impacts of the interventions on overall health expenditure?

1.3. Do the interventions impact prevalence of catastrophic health spending?

2. Equity: How do the different interventions affect utilization of PHC services by different groups?
   2.1. What is the effect of the different interventions on utilization of PHC services by individuals of *different socio-economic backgrounds*?
3. Facility functioning: How do the different interventions affect aspects of health facility functioning that are likely to mediate improvements in service coverage and quality, including:
   3.1. Funds available at the operational (i.e., facility) level
   3.2. Factors that determine physical and social accessibility of health services, including facility opening hours, outreach for health services and staff behaviors
   3.3. Staff absenteeism
   3.4. Demand generation activities such as Behavior Change Communication by facility staff

The main targeted outcomes that the IE will measure, fall into three main groups: (a) PHC service coverage indicators with a specific focus on maternal and child health (MCH) and non-communicable disease (NCD) services (for both incentivized and un-incentivized services under the PBF scheme), (b) quality of care indicators, and (c) selected health outcome indicators to be measured through anthropometry or tests.

Although the ultimate goal of the project is to improve maternal and child health outcomes, it is important to keep in mind that detecting such outcomes might require some years as well as a very large sample. Therefore, as reflected in the research questions above, the IE will focus mostly on the intermediate outputs of the project, i.e., service coverage, quality, cost-effectiveness, health expenditures and equity, and may not have adequate power to detect statistically significant changes in health outcomes over the duration of the evaluation.

1.3 Identification Strategy

The IE employs both difference-in-difference and experimental approaches to identify the impact of the different combinations of interventions. Assignment to PBF was not random. Three districts in the Sughd region and 4 districts in the Khatlon region were selected to implement the program. All Rural Health Centers in these seven districts are covered by the program. Nine additional district (two in Sughd and seven in Khatlon) were selected as control districts. The selection of the control districts was guided by geographical proximity to treatment districts and similarity in terms of number of health facilities and doctors per capita. The districts were also selected such that the number of RHCs in treatment and control groups in each region would be similar.

Within the chosen 16 districts (treatment and control districts), clusters consisting of a RHC and its subsidiary Health Houses were randomly assigned to implement Collaborative Quality Improvement, Citizen Score Cards, or neither of these two interventions. The randomization was blocked by district. In sum, RHCs were assigned into six study arms, as presented in Table 1.3.1.

Table 1.3.1: Study Arms	
Region	**District**
Treatment Group 1 (T1)	PBF only clusters*
Treatment Group 2 (T2)	PBF + Collaborative Quality Improvement
Treatment Group 3 (T3)	PBF + Citizen Report Card clusters
Treatment Group 4 (T4)	Collaborative Quality Improvement clusters
Treatment Group 5 (T5)	Citizen Report Card clusters
Comparison Group (C)	Business-as-usual clusters

Table 1.3.1.: Study Arms

* A cluster is defined as a Rural Health Center (RHC) and its corresponding Health Houses (HHs). RHCs and HHs in PBF and comparison districts was randomly assigned to study groups.

Difference-in-Differences

A difference-in-differences approach will be used to answer primary research questions 1 and 6: namely the effect of PBF on quality of service, coverage and cost-effectiveness relative to business-as-usual. In order to estimate impact, the difference-in-differences approach will compare the change over time in treatment groups 1-3 to the one in treatment groups 4 and 5 and the comparison group.

The validity of this approach relies on the assumption that changes over time that are not related to the PBF intervention are common to both the treatment groups and the comparison group. We used the Tajikistan Demographic and Health Survey 2012 (TjDHS2012) data to assess whether the parallel trends assumption can be rejected for the years 2008-2012. Using the data on pregnancies in different years, we created annual indicators for behaviors related to ANC visits, breastfeeding and vaccinations. We tested whether we could reject parallel trends in the rates between project districts and the other districts within the same regions. We could not reject the parallel trend for any indicator. It is important to note that while it is reassuring that we could not reject parallel trends in previous years, the identification of causal effects still relies on the assumption that trends, absent of our interventions, would remain the same during the years of the project implementation.

Randomization

A randomized evaluation design is used to answer primary research questions 2-6, evaluating the effects of the additional CRC and CQI interventions on outcomes when implemented by themselves or in addition to the PBF scheme. Successful randomization would ensure a balanced sample between study groups 1, 2 and 3 and between study groups 4, 5 and 6 to facilitate causal inference. This process of random allocation seeks to ensure that the different study groups are comparable in terms of observed and unobserved characteristics that could affect treatment outcomes so that average differences in outcome can be causally attributed. The randomization of the CQI and CSC intervention was blocked by district. The difference between a regular cluster-randomized trial (CRT) and a blocked CRT lies in the way in which

the treatment units—the rural health centers in this case—are randomly allocated into the different study arms. In a regular CRT, health facilities would be randomly assigned into a study group independent of the region (or rayon) they belong to. In this blocked-by-district CRT, each district will have its own randomization scheme.

Spillovers/Contamination

The IE team is aware that individuals living in the catchment area of a facility assigned to a given study group (e.g. Treatment Group 1) may visit a health facility assigned to a different group (e.g. Treatment Group 2). In general, the low density of health facilities in the predominantly rural study rayons lowers these risks. Nonetheless, where this occurs it could bias our estimates of impact. The IE will therefore seek to (a) minimize, and (b) measure contamination and account for how this may have affected the estimates of impact. There are defined catchment areas in Tajikistan. Households will then be sampled from these catchment areas. During data collection, the survey team will ensure that the health facility actually used for each service of interest is accurately recorded so that any contamination can be measured. Each survey team will increase the likelihood of accurate identification of the health facilities used by obtaining and using local names for health facilities in a given area and potentially showing respondents photographs of local health facilities when attributing service use to a health facility during the household survey.

While performing the analysis, the team will compare outcomes in control facilities close and far away from the treated facilities. The team will also use the distance between the households and different facilities as a predictor of switching between facilities. This analysis, however, might suffer from insufficient statistical power.

Facility level spillovers related to organizational or quality of care outcomes might arise with the randomization of the CQI and CSC interventions within districts. Containing such spillovers might be challenging as the facilities operate under the same district managements. Process monitoring using qualitative methods will assess whether spillovers are occurring and appropriate mitigation methods will be designed. The endline qualitative assessment and facility survey can also attempt to measure any such spillover.

1.4 Data and Sampling Framework

Outcomes in treatment and comparison groups would be measured over time using a combination of household health facility and household survey data. The goal of the Facility-based survey is to measure multiple dimensions of quality of care and collect detailed information on key aspects of facility functioning. Household surveys are primarily used to measure health service coverage at the population level as well as select health outcome indicators measured through anthropometry or tests. The surveys also collect broader data on the health of the households, health seeking behaviors and barriers to use of health services. In addition, PBF and other administrative data would be used to track outcomes over time in the treatment groups 1-3 (the ones receiving performance-based payments).

The baseline survey was implemented prior to the implementation of PBF in the 7 study treatment districts and a follow-up survey (endline) is planned to take place after three years of project

implementation. The survey is largely based on the HRITF instruments that were modified to the Tajik and project context.[1]

Districts and Rural Health Centers

Table 1.4.1 presents the list of selected districts, their assignment into the PBF treatment and the number of RHCs in each district. As the set of RHCs in each study district were randomly assigned into three study arms, some RHCs were not included in the study when the number of RHCs in a district was not divisible by three. Excluded RHCs were randomly selected with all RHCs having identical probability of being selected. The sample size is of 216 Rural Health centers, 108 in PBF districts and 108 in control districts. Of the 216 RHCs, 66 are in Sughd and 150 are in Khatlon. The sample of facilities will be identical for the baseline and endline surveys.

Table 1.4.1: Selected Districts and Number of Rural Health Centers	District (Rayon)	PBF Treatment/ Control	Number of Rural Health Centers	Number of Rural Health Centers included in Study
Sughd	Ganchi	PBF	15	15
	J. Rasulov	PBF	14	12
	Matcha	PBF	7	6
	Asht	Control	18	18
	Kanibadam	Control	16	15
Khatlon	J. Rumi	PBF	16	15
	Kabadiyan	PBF	16	15
	Farkhor	PBF	26	24
	Yavan	PBF	22	21
	Kumsangir	Control	9	9
	A. Jomi	Control	7	6
	Vakhsh	Control	14	12
	Jilikul	Control	15	15

[1] The HRITF instruments can be found at the Impact Evaluation Toolkit Website: www.worldbank.org/health/impactevaluationtoolkit

	Temur Malik	Control	11	9
	Pyanj	Control	12	12
	Khuroson	Control	12	12
Total				216

Table 1.4.1: Selected Districts and Number of Rural Health Centers

An abridged Health Facility survey was implemented also in Health Houses. While some Rural Health Centers have one or more subsidiary Health Houses in their catchment areas, other do not have any. One Health House from each RHC with subsidiary HHs was to be included in the sample. Selection was random with each health house within a cluster having identical probability of being chosen. Non-selected health houses were ranked to serve as replacements in case the survey cannot be implemented in the selected HHs. Table 1.4.2 presents the number of HHs selected for the sample for each district (that is, the number of RHC that have subsidiary health houses). Of the 216 RHC selected for the sample (after excluding some RHCs when the total number was not divisible by three), 150 have subsidiary HHs. Forty-three HHs were selected of the sample in Sughd and 107 in Khatlon

Table 1.4.2: Number of Health Houses by District	**District**	**Number of HHs**
Sughd	Ganchi/Gonchi	11
	J. Rasulov	8
	Matcha/Mastcho	4
	Asht	9
	Kanibadam	11
Khatlon	J. Rumi	14
	Kabadiyan	12
	Farkhor	7
	Yavan	17
	Kumsangir	9
	A. Jomi	6
	Vakhsh	10

	Jilikul	10
	Temur Malik	8
	Pyandj	10
	Khuroson	5
Total		**150**

Table 1.4.2: Number of Health Houses by District

Households

The evaluation relies on two samples of households. As the primary focus of the PBF intervention is on Maternal and Child Health (MCH) services, the main household sample is of households with women who experienced a recent pregnancy. This sample, however, would not be appropriate to study the impact on the coverage of services related to Non Communicable Diseases (NCD). Therefore, a secondary sample consists of households with individuals over the age of 40. The household samples are clustered according to the catchment area of each Rural Health Center (and its affiliated health houses).

To estimate the needed sample size of households per cluster for the households with recent pregnancies, the research team used data from a household survey collected by the Swiss Tropical and Public Health Institute in the project regions in 2012 for a study conducted to inform the design of the PBF project. The outcome chosen for this analysis is the completion of at least 4 antenatal consultations during a pregnancy, one of the PDO level results indicators of the project. 65.5% of women reported at least 4 consultations during their last pregnancy. The intra-cluster correlation, after controlling for rayon of residence, is 0.052. Assuming a t-test significance level of 0.05 and power of 0.8, a sample of 20 households per cluster could detect an effect size of six percentage points in the diff-in-diff analysis comparing the PBF and control districts. This power calculation is conservative, given that it ignores the Difference-in-Difference and matching strategies that could increase power. Under the same set assumptions, the cluster size of 20 households per RHC would also allow to detect an effect of eight percentage points when employing the experimental design to compare the outcomes with and without the CSC and CQI interventions.

The resulting targeted primary household sample size is of 4,320 households, with twenty in each of the 216 clusters in the six study arms. To be eligible for inclusion in the household survey sample, households must have at least one woman aged 15-49 years who has had a child in the preceding 3 years. The same villages will be covered for both the baseline and follow up survey and eligibility will be determined at each round by a listing exercise.

For budgetary reasons, the impact on NCD outcomes will only be measured in treatment group 1 (PBF only) and the control group. To estimate the needed sample size of households per cluster for these outcomes, we use a nationally representative data that includes blood pressure measurement. The outcome chosen for this analysis is an indicator of high blood pressure. The data show that prevalence of

high blood pressure increases significantly between ages 30 and 40. However, because of the relative low amount of individuals above the age of 40, the following calculations are performed using the sample of individuals above the age of 30 and combine both men and women. About 40% of individuals in this age group have high blood pressure. The intra-cluster correlation, after controlling for rayon of residence, is 0.03. Assuming a t-test significance level of 0.05 and power of 0.8, a sample size of 22 households per cluster will allow detection of nine percentage points reduction.

The resulting targeted sample size for the secondary household sample is 1,584 households, with 22 in each of 72 clusters in two of the six study arms. Eligibility for this sample is determined by the presence of an individual over the age of 40 in the household. Eligibility for the two different samples is determined by a common listing of households in selected villages. Households that satisfy both eligibility criteria can be randomly selected to count towards the sample size requirements for both.

A two-stage cluster sampling methodology was employed to identify the random samples. First, villages were randomly selected out of a list of the villages served by each facility. The list was obtained from the MoH. RHCs have either a single or multiple villages in their catchment areas while HHs typically serve a single village. If a RHC has at least one affiliated HH, then two villages were selected. One of the village was directly served by the RHC while the other included in the sub-catchment area of the HH. In each village, 100 households were listed. In case the village had more than 100 households, a random walk method was used to select the target number. A short questionnaire was conducted at each household to determine households' eligibility for the two samples. From all eligible households, the target sample for each catchment area was selected. In catchment areas in which two villages were included in the sample, half of the households were to be selected from each village. Sampling for the follow-up survey will follow the same procedures.

2. Baseline Survey

The survey of households, Rural Health Centers and Health Houses was conducted from November 2014 to July 2015 to provide a baseline against which the impact of the project will be measured. A local firm, Zerkalo, was selected through an international competitive procurement process to manage all aspects of the data collection. Zerkalo worked closely with the World Bank impact evaluation team and Ministry of Health, especially on the adaptation of the questionnaires and the preparation of the protocols for listing, sample selection and fieldwork.

2.1 Survey Instruments

The HRITF survey instruments were adapted to the Tajik context. Additional modules were developed to correspond to the project focus on NCD outcomes on top of the MCH outcomes. Representatives of the MoH, Zerkalo and members of the WB team conducted several field visits to health facilities to inform the adaptation of the survey instruments. The instruments were pretested three time between August and October 2014, prior to the training of the field team. A consultant with public health and medical expertise was hired to develop the clinical instruments. Household questionnaires were translated into Tajik while health facility questionnaires were translated into Tajik and Russian.

Household Survey

The household survey is composed of three questionnaires: main household questionnaire, a female and child questionnaire, and a questionnaire for adults over 40 years. The main household questionnaire was implemented in all households. According to the sampling strategy, separate samples were to be selected for a recent pregnancy and adults over 40. However, the over-40s questionnaire was implemented to eligible respondents in the entire household survey sample as the questionnaires were programmed such that an interviewer could not skip a section if there was an eligible household member. As a result, in the final sample we end up with more than the target number of over- 40s.

Main household questionnaire: The main respondent for the household-level questionnaire is the head of household and/or spouse, although a few modules were administered to each member of the household. The respondent could ask for support from other household members on specific questions regarding the household. The household questionnaire focused on the following topics:

- Socio-demographic characteristics: household composition and the age, marital status, employment and education level of all household members
- Income, transfers, assets and housing
- Consumption of food and other items
- Migration of household members in and out of the country
- Mortality
- Utilization of health care
- Blood pressure measurements for all adults over 18 years

Female questionnaire. The female questionnaire was administered to female household member(s) 15-49 years old. The topics covered by the questionnaire were:

- General health status
- Pregnancy history, reproductive health and utilization of family planning methods
- Antenatal, delivery and postnatal care received during recent pregnancies/births
- Vaccination of children under 5 years
- Anthropometric measures of the children under 5 years

Adult over 40 questionnaire: The respondent(s) for this questionnaire are household members above the age of 40 years. The topics of focus for the questionnaire were:

- General health status
- Health-related behaviors such as physical activity, smoking and alcohol consumption
- Health care seeking
- High cholesterol and other health conditions

Facility-Based Surveys

A complete health facility survey was conducted in RHCs, whereas for health houses a shorter survey was implemented. A challenging and important goal of the facility-based survey is to collect different measures of quality of care in the health facilities.

Health Facility Assessment: The facility assessment module seeks to collect data on key aspects of facility functioning and structural aspects of quality of care. The respondent for this module were the individuals in charge of the health facility at the time when the survey team visits the health facility. The main themes to be covered by the facility assessment include:

- Facility staffing, including the staffing complement of the facility, staff on duty at the time of the survey team's visit and staff present at the time of the survey team's visit
- Facility infrastructure and equipment
- Availability of drugs, consumables and supplies at the health facility
- Supervision
- Record keeping and reporting to the Health Management Information System
- Service volumes

Health Worker Questionnaire: A random sample of 4 health workers was to be taken at each of the Rural Health Centers and Health Houses included in the sample. Eligible health workers include doctors, nurses, midwife/auxiliary midwife, and any other health worker providing MCH or NCD care. In facilities with less than 4 health workers on their staff roster, all eligible health workers were to be interviewed.
The main themes to be covered by this module include:

- Role, responsibilities and characteristics of the interviewed health worker
- Staff satisfaction and motivation

- Technical knowledge on MCH and NCDs. Knowledge was assessed through the use of provider vignettes on MCH and NCD protocols and diagnosis.

Direct Observation of Patient-Provider Interactions: The goal of the direct observations is to assess adherence to protocols in terms of IMCI and hypertension management. At each Rural Health Center, up to 5 children under-five and up to 5 adults over 40 years who are potential candidates for hypertension identification/management services was to be selected. A member of the survey team observed consultations using a structured format to note whether key desired actions were carried out. In the case of patients under five, the instrument focuses on whether IMCI protocols are followed. For adults over 40 years, the instrument focuses on whether MoH and international protocols are followed. The direct observations were implemented only in RHCs.

Patient Exit Interviews: The same set of patients who were selected for the direct observations of patient-provider interactions were also selected for exit interviews. If the patient is a child, the child's caregiver was interviewed. The exit interviews collected data on the patients' perceived quality of care and satisfaction with the care given. Additional information was collected on socio-economic background and the general health of the patient. Like the direct observations, the exit interviews were only administered in RHCs.

Criterion Based Audit: A target sample of 5 under-five and 5 adult (40+ years) medical records was selected using systematic random sampling methodology at each Rural Health Center to assess whether the content of clinical care delivered is complete and appropriate in light of clinical best practices. Each indicator in the criterion-based clinical care audit is scored through a review of patient records or other facility logs using a structured format. The criterion-based clinical audit focused on IMCI protocols (for under-fives) and hypertension screening and management (for adults over 40 years).

2.2 Ethical clearance

The Committee on Ethics of the Ministry of Health and Social Protection reviewed the study design, fieldwork protocols and the instruments and granted ethical clearance for the study on October 24th 2014.

2.3 Field Work

Health Facility Survey

The Health facility survey was conducted in two phases, according to the PBF treatment status of the districts. As the baseline was to be implemented prior to the launch of the program, districts that were assigned to the PBF program were prioritized and the health facility surveys in those seven districts were implemented from November to December 2014. The survey in the other nine districts took place in January to March 2015.

Field teams for the health facility survey were composed of a supervisor and two enumerators, with each team covering a district or two. All recruited enumerators had some medical background. For the first phase, a seven-day training was held in Dushanbe. For the second phase two 5-day training were held in

each of the regions. Each training included a day of piloting the survey instruments by the field teams, using the tablets.

Household Survey

The Household survey was conducted between April and July 2015. Field teams were organized in two regional groups. Four supervisors and 28 enumerators were recruited in the Sughd region while seven supervisors and 62 enumerators were recruited in Khatlon. All team members had either medical background or prior experience in working on medical research projects. Each supervisor oversaw work in one or two districts. The size of the teams varied by district as the sample sizes were different among districts. A ten-day training was conducted in each region prior to the launch of the field work. Each training included a day of piloting the survey instruments by the field teams, using the tablets.






Data collection was launched after trainings were completed. The regional manager was assigned for each interviewer's team to assist them; provide logistical support and material; monitor interviewers' activities during the data collection process; assess the quality of interviewers' work and the quality of data from the completed questionnaire; provide feedback to interviewers on quality assurance and methodology requirements. On the first day of data collection, each survey supervisor went to the representatives of local government. They informed about the goals and objectives of the survey and presented a support letter.

Each team was directed to the selected household in related districts. On the first day, the interviewers went to the health facilities in each district and introduced the team, presented the list of selected households. With the assistance of a representative from health facility, the selected households were identified and interviews were introduced to the household members. The household selections were determined by the instructions and the survey methodology. All selected households included either women, who had recent birth (since January 2012) or adults over the age of 40. The majority of households had both requirements: women with recent birth and adults over 40 years old. At the end of each interview, the households were given small remuneration (soaps, detergents powder) for the time they spend for an interview.

2.4 Final Sample

Health Facility

In Sughd, all health facilities were assessed according to selected list and no replacement was used. In Khatlon, four health facilities were replaced. The reason for replacement was absence of RHC and referring HH. One HH was added due to replacement of a RHC and the final number of surveyed health facilities is 367.

Table 2.4.1: Number of Questionnaires (Rural Health Centers)	Target	Sample Size	Achievement
Health Facility Assessment (F1)	216	216	100%
Health Worker Individual Questionnaire (F2)	864	781	90%
Direct Observations (F21)	2160	635	29%
Clinical Vignettes (F22)	864	835	97%
Criterion-Based Audit (F23)	2160	1407	65%
Exit Interviews (F4)	2160	619	29%

Table 2.4.1.: Number of Questionnaires (Rural Health Centers)

Table 2.4.2: Number of Questionnaires (Health Houses)	Target	Sample Size	Achievement
Health Facility Assessment (F1)	151	151	100%
Health Worker Individual Questionnaire (F2)	600	319	53%
Clinical Vignettes (F22)	600	321	54%

Table 2.4.2: Number of Questionnaires (Health Houses)

The achieved sample sizes for the direct observations and exit interviews is low because of low number of patients who visited the facilities during the survey days. It was more difficult to achieve the required sample in Khatlon compared to Sughd region. For the criterion-based audit, the field teams encountered difficulties in finding the medical records to review. The average number of staff members present at the HHs resulted in the low number of health providers interviewed.

Household

For the household sample, there were two main deviations from the suggested protocol. 1) All eligible household members were interviewed regardless of the selected sample and 2) whereas the listing exercise followed the suggested protocol and sampled for households with a pregnancy within past 3 years, the questionnaire was programmed to interview women with a pregnancy within 2 years for the maternal health section. These two deviations caused the final sample to have more than the target number of adults and less than the target number of women with a recent pregnancy.

About 8% of all visited households were replaced. In most cases, households were replaced as a household member refused to be interviewed. Other reasons include change of residence (temporary during summer), and some households were not meeting the eligibility criteria.

2.5 Clustering & weighting

The household samples are clustered according to the catchment area of each Rural Health Center (and its affiliated health houses). Equal number of households were selected for the survey in each catchment area. Sample weights were created to ensure the sample is representative of the selected districts in Sughd and Khatlon provinces.

In this section, we will first present estimates of the catchment population and thereafter explain the calculation of sample weights used for the analysis.

2.5.1 Catchment Population

The following table shows estimated parameters from TjDHS2012 that were used to estimate eligible households in the catchment population. The information is based on rural areas in Sughd and Khatlon region. The selection of the two samples was done separately. However, by chance a household could be selected for both recent pregnancy and adult 40+. We therefore need representative shares for 3 samples; a) households with both a recent pregnancy and an adult 40+, b) household with a recent pregnancy and no adult 40+, c) households with an adult 40+ and no recent pregnancy.

Table 2.5.1.1: Estimated parameters from TjDHS2012	HH size	Eligibility share (both)	Eligibility share (only recent pregnancy)	Eligibility share (only adult 40+)
Region (Oblast)				
Sughd	6.2	24.6%	4.5%	59.0%
Khatlon	7.5	34.3%	6.1%	51.2%

Table 2.5.1.1: Estimated parameters from TjDHS2012

In the following, we will assume that the size of the household and the share of different samples are constant within region and across catchment areas. Data on the estimated population of each catchment area was obtained from the Ministry of Health. Estimated number of households is calculated as the total catchment population divided by average household size within region. The estimated number of eligible households is calculated as estimated number of households times the average share of eligible households within region.

Table 2.5.1.2:	District (Rayon)	Total Catchment Population	Estimated number of HHs[1]	Estimated HHs w. recent birth[2]	Estimated HHs w. adults 40+ in all districts[2]	Estimated HHs w. adults 40+ in 72 districts[2]

Sughd	Konibodom	130,116	20,986	6,122	17,551	6,046
	Asht	107,305	17,307	5,049	14,474	5,006
	Gonchi	94,985	15,320	4,469	12,812	4,146
	J. Rasulov	94,090	15,176	4,427	12,692	4,806
	Mastchoh	75,175	12,125	3,537	10,140	3,420
	Total (Sughd)	501,671	80,914	23,604	67,669	23,424
Khatlon	Vahsh	63,258	8,356	3,384	7,172	3,103
	Kumsangir	52,318	6,911	2,798	5,932	1,919
	Pyanj	43,391	5,732	2,321	4,920	1,629
	A. Jomi	34,757	4,591	1,859	3,941	1,393
	Temurmalik	35,222	4,653	1,884	3,994	1,381
	Khuroson	57,865	7,644	3,095	6,561	1,985
	Jilikul	64,756	8,554	3,464	7,342	2,750
	J. Rumi	105,408	13,924	5,638	11,951	3,987
	Kabodiyon	95,847	12,661	5,127	10,867	3,435
	Yovon	111,919	14,785	5,986	12,690	4,242
	Farhor	88,117	11,640	4,713	9,991	3,251
	Total (Khatlon)	752,858	99,451	40,269	85,361	29,075
	Total	**1,254,529**	**180,365**	**63,873**	**153,030**	**52,499**

Table 2.5.1.2: Estimated number of households in catchment areas
1) Estimated number of households is calculated as total catchment population divided by average household size within region.
2) Estimated number of households is calculated as estimated number of households times the average share of eligible households within region.

2.5.2 Listing

A two-stage cluster sampling methodology was employed to identify the random samples. First, villages were randomly selected out of a list of the villages served by each facility. In each village, 100 households were listed. In case the village had more than 100 households, a random walk method was used to select the target number. If there were not enough eligible households in one village, the target number was completed with eligible households from the next selected village in the catchment area. If less than 18 households with recent birth or 19 households with members over-40 were found in total in the 2 villages, a third village was selected to be listed. A short questionnaire was conducted at each household to determine households' eligibility for the two samples.

The information from the listing was used for an equal probability random selection of eligible households in the second stage. From all eligible households, the target sample for each catchment area was selected.

2.5.3 Design and sample weights

The design weight is the inverse of the overall probability with which the household was selected. The sample weight is the design weight corrected for non-response.

The calculations of the design weights follows the sampling design. The selection of the 'recent birth' and of the 'over-40' sample was done separately. However, in some cases, the same households was randomly selected for both samples.

As previously described, the listing of villages were made conditional on a target of 100 households (200 households in catchment areas with an affiliated HH). I.e. villages were added based on a randomly selected priority list of villages or households were randomly skipped by the listing team if the village had more than 100 households. This means, that all households within a catchment area had an equal probability of being listed:

$$\frac{\#\ of\ listed\ households}{\#\ of\ households\ in\ catchment\ area}$$

The number of actually listed households ranges between 100 and 200. Especially in Sughd where the listing team started, the target was not always met. For the design weights, we use the actual number of listed households.

Secondly, the probability of selecting a household within a village (conditional on eligibility) is the proportion of selected households to eligible households:

$$\frac{\#\ of\ selected\ households}{\#\ of\ eligible\ households}$$

This information could be estimated by using the listing sample. However, an ex-post comparison of the listing data against the subnational representative sample from TjDHS2012 revealed an over-representation of eligible households for recent pregnancy, and the research team decided to use estimated shares from TjDHS2012.

The overall selection probability is the product of the selection probabilities of the two stages.

$$p = \frac{\#\ of\ listed\ households\ within\ catchement\ area}{\#\ of\ households\ in\ catchment\ area} \times \frac{\#\ of\ selected\ households}{\#\ of\ eligible\ households}$$

The design weights are calculated as the inverse of this probability. For the analysis, the design weights are corrected for non-responses.

The idea of correcting for non-responses is to mitigate that some household members are more likely to be unavailable for the survey. The sample weights are calculated by inflating the design weights with a response rate for homogeneous response groups. The research team were able to analyze response rate by background characteristics, as these are included in the main part of the questionnaire answered by the head of household or the spouse. That is, the survey has information on all households member also when not available for an interview. The analysis showed reasonable homogenous response groups has to be defined by region, age, and gender. Overall, the response rate was higher in Khatlon, higher for women, and varying across age.

Table 2.5.4.1: Response rate by Region, Age and Gender		Sughd			Khatlon		
Age		Male	Female	Sample Size	Male	Female	Sample Size
	15-20	72.4	80.2	630	78.7	93.9	2,697
	21-25	53.3	84.3	1,243	54.8	90.1	3,425
	26-30	55.1	87.3	1,629	56.6	92.4	3,774
	31-35	51.8	83.2	909	59.1	91.9	2,303
	36-40	64.3	87.4	494	61.9	95.4	1,326
	41-45	70.0	92.7	285	62.7	96.5	849
	46-50	59.7	83.2	394	74.4	97.8	937
	51-55	72.7	90.9	623	80.1	97.3	1,206
	56-60	72.6	93.3	583	85.8	96.0	1,115
	61-65	80.3	93.6	359	86.0	96.1	671
	66-70	91.0	87.8	178	88.5	96.9	397
	71-75	80.0	98.3	74	94.7	93.4	233
	76-80	89.1	93.2	82	85.2	91.1	186
	81-100	93.4	98.4	91	92.3	90.5	166
Total		73.5	88.9	7,574	77.4	94.3	19,285

Table 2.5.4.1: Response Rate by Region, Age and Gender

3. Household Survey

This chapter presents findings from the baseline household survey. First, summary statistics on socio-demographic background are presented. Next, we will show the health status of the household members (with a focus on MCH and NCDs), and their interaction with the health care system.

3.1 Background characteristics of the households and respondents

3.1.1 Demographic characteristics of households

The impact evaluation relies on two samples of households. As the primary focus of the PBF intervention is on Maternal and Child Health (MCH) services, the main household sample is of households with women who experienced a recent pregnancy. This sample, however, would not be appropriate to study the impact on the coverage of services related to Non Communicable Diseases (NCD). Therefore, a secondary sample consists of households with individuals over the age of 40.

Table 3.1.1.1 shows household composition for the two samples. It is observed that households with a recent pregnancy are on average 1.6 members larger than households selected with an adults 40+ household member. Households in Khatlon are on average larger than households in Sughd.

Table 3.1.1.1. Household Composition

	HH members	HH head (male)	Adults 18+	Adult equivalent [1]	Children <5	Adults 40+	Sample size
Region	**Households in both samples**						
Sughd	7.2	82.7	4.5	3.7	1.0	1.9	1,497
Khatlon	8.3	83.6	4.8	4.1	1.3	1.8	3,535
Total	7.8	83.3	4.7	3.9	1.2	1.8	5,032
Region	**Households with Recent Pregnancies**						
Sughd	8.2	80.6	5.0	4.0	1.8	1.8	1,327
Khatlon	9.7	84.5	5.5	4.6	2.0	1.7	3,018
Total	9.1	83.0	5.3	4.4	1.9	1.7	4,345
Region	**Households with Adults over 40**						
Sughd	6.9	83.1	4.3	3.6	0.8	1.9	547
Khatlon	8.0	82.9	4.7	4.0	1.1	1.8	1,121
Total	7.5	83.0	4.5	3.8	1.0	1.9	1,668

Table 3.1.1.1: Household Composition

[1]) Adults equivalent is calculated by giving a weight of 1.0 to the first adult, 0.5 for each subsequent person aged 14 or more, and 0.3 for all children less than 14.

Table 3.1.1.2a shows characteristics of female household members aged 15-49 who were available for interview. From this sample, women who have had a pregnancy and is not currently pregnant, are later selected for descriptive statistics on fertility preferences and family planning methods. In addition, the children of these women are included in the sample for the analysis of child health.

Table 3.1.1.2b present the characteristics of the subsample of women who were pregnant in the two years preceding the survey and live in the selected households of the main sample. These women are used for the analysis of utilization of maternal health services.

Table 3.1.1.2: Characteristics of Female Samples	(a) Women 15-49			(b) Women with a pregnancy in the two years preceding the survey		
	Sughd	Khatlon	All	Sughd	Khatlon	All
Age (mean)	28.2	27.7	27.9	25.9	26.7	26.4
Marital status						
Never married	13.3	21.7	17.9	0.2	0.3	0.2
Married, incl. Nikokh	82.1	72.6	76.9	96.5	97.6	97.3
Divorced	2.4	2.8	2.6	1.7	1.2	1.4
Widowed	1.6	2.8	2.2	0.5	0.7	0.6
Other	0.5	0.2	0.3	1.0	0.2	0.5
Relationship to head of household						
Head	0.8	1.3	1.1	1.1	0.2	0.5
Spouse	15.8	21.3	18.8	6.9	17.7	14.2
Son/Daughter	13.4	22.2	18.3	4.0	2.5	3.0
Son/Daughter in-law	65.6	50.5	57.3	87.5	78.6	81.5
Grandchild	3.4	2.5	2.9	0.2	0.0	0.1
Other	1.0	2.2	1.7	0.4	0.9	0.8
Educational level						
Less than completed primary school	11.4	35.8	24.8	15.1	21.7	19.6
Completed primary school	29.4	25.8	27.4	29.4	34.6	33.0
Completed secondary school	51.9	36.1	43.2	49.1	41.8	44.2
Higher than secondary school	7.3	2.3	4.5	6.3	1.8	3.3
Literate	48.9	31.4	39.3	47.8	33.6	38.2
Employment status						
Employed	11.2	6.8	8.8	5.1	3.9	4.3
Housewife	78.7	77.9	78.3	92.1	93.5	93.0
Student	8.0	12.5	10.5	1.6	1.2	1.3
Other	2.0	2.7	2.4	1.2	1.5	1.4
Sample size	2,484	7,065	9,549	718	2,085	2,803

Table 3.1.1.2: Characteristics of Female Samples

Table 3.1.1.3 presents characteristics of the children in the sample. These are all of the children less than five from the two samples.

Table 3.1.1.3: Characteristics of Child Sample			
	Sughd	Khatlon	All
Gender			
Male	50.2	50.9	50.7
Female	49.8	49.1	49.3
Age			
0-11m	25.3	22.6	23.3
12-23m	22.1	24.9	24.1
24-35m	20.8	19.6	19.9
36-47m	17.5	17.0	17.2
48-59m	14.2	16.0	15.5
Relationship to head			
Son / Daughter	10.1	21.2	18.1
Grandchild	85.6	73.4	76.9
Other	4.3	6.4	5.0
Mother lives in the household	99.1	99.4	99.3
Sample Size	2,416	6,028	8,444

Table 3.1.1.3: Characteristics of the Child Sample

Table 3.1.1.4 presents the characteristics of the two samples of adults. Sample (a) consists of all household members of age 18 or above from both samples while sample (b) includes household members of age 40 or older from the additional NCD sample only.

Table 3.1.1.4: Characteristics of Adult Samples	(a) Household members of age 18 or older			(b) Household members of age 40 or older		
	Sughd	Khatlon	All	Sughd	Khatlon	All
Age (mean)	38.5	36.4	37.2	55.1	53.3	54.1
Gender						
Male	49.0	49.8	49.5	40.1	39.6	39.8
Female	51.0	50.2	50.5	59.9	60.4	60.2
Marital status						
Never married	10.0	14.9	13.0	0.0	0.7	0.4
Married, incl. Nikokh	82.9	77.1	79.8	84.4	84.0	84.1
Divorced	1.5	2.1	1.8	0.8	2.0	1.5
Widowed	5.3	4.9	5.1	14.4	13.2	13.7
Other	0.4	0.2	0.2	0.3	0.2	0.3
Relationship to head of household						
Head	22.0	20.9	21.3	45.2	47.0	46.2
Spouse	17.1	17.2	17.2	41.7	42.3	42.1

	Son/Daughter	32.6	34.7	33.9	6.9	3.2	4.8
	Son/Daughter in-law	24.4	21.4	22.6	4.1	2.6	3.2
	Other	3.9	5.8	5.0	2.1	5.0	3.7
Educational Level[1]							
	Less than completed primary school	14.7	28.7	23.3	14.3	27.7	21.8
	Completed primary school	25.1	21.6	23.0	29.7	20.6	24.6
	Completed secondary school	49.7	41.0	44.4	49.3	45.4	47.1
	Higher than secondary school	10.4	8.7	9.4	6.7	6.3	6.5
Literate		64.2	51.2	56.2	60.0	51.2	55.1
Employment status							
	Employed	28.1	20.1	23.2	28.0	21.7	24.5
	Looking for work	8.4	14.9	12.4	6.6	9.4	8.2
	Not working (student, housewife, etc.)	53.2	60.5	57.7	61.7	68.6	65.5
	Other	10.2	4.5	6.7	3.7	0.3	1.8
Sample size		5,487	14,076	19,563	605	1,277	1,882

Table 3.1.1.4: Characteristics of Adult Samples

3.1.2 Households' source of water and sanitation

As presented in Table 3.1.2.1 and Figure 3-1, 78.5 percent of households in Sughd and 53.4 percent of households in Khatlon have access to improved source of water. Most of these households in Sughd either have piped water available in the dwelling, yard, or plot (33 percent), get water from a public tap or standpipe (19 percent) or from a tube well or borehole (18 percent). The most common non-improved water source is surface water. The level is 39 percent of households in Khatlon obtaining drinking water from surface water, i.e., water from rivers, lakes, etc.

Table 3.1.2.1: Households' Source of Water

	Access to improved source of water[1]	Treatment of drinking water			Paying for water	Sample Size
		Boil	Chlorine	No treatment		
Region (Region)						
Sughd	78.5	94.3	1.1	4.6	67.0	1,497
Khatlon	53.4	96.4	0.2	3.4	80.2	3,535
Total	63.8	95.5	0.6	3.9	74.7	5,032

Table 3.1.2.1: Households' Source of Water
Improved source of water includes; piped water into dwelling, public tab, tube well/borehole, protected well, protected spring, rainwater and bottled water

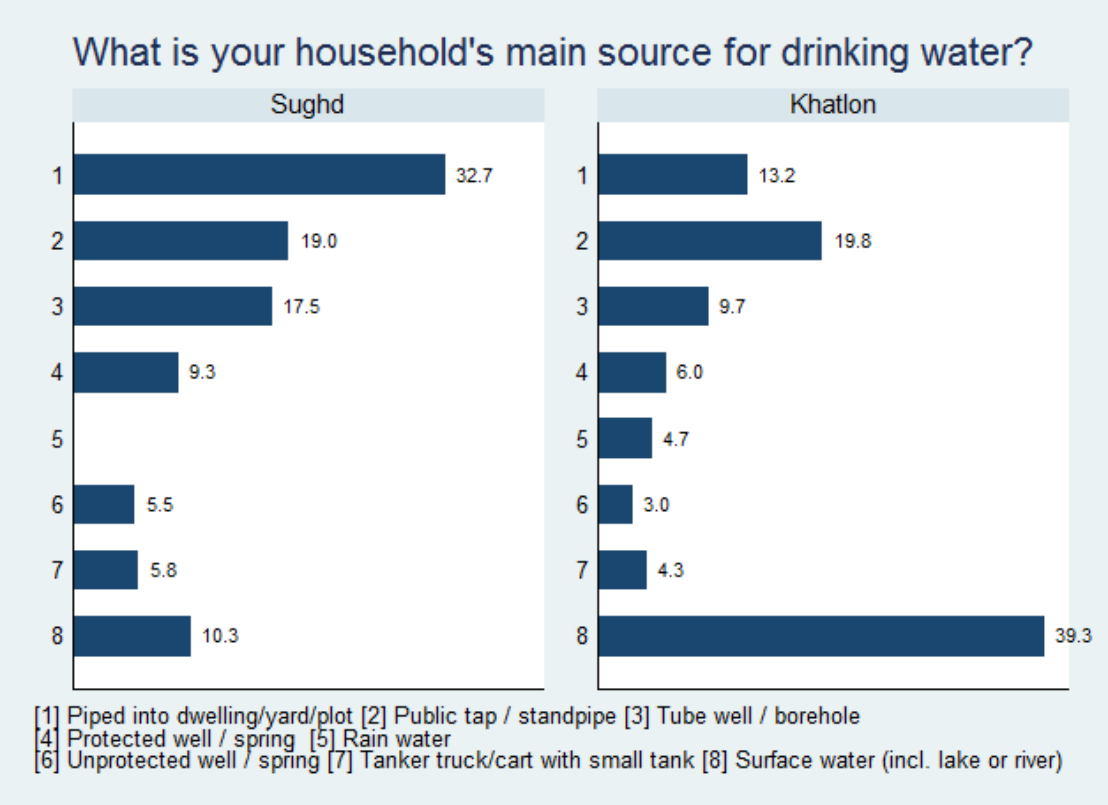


Figure 3-1: What is your household's main source for drinking water?

In terms of sanitation, a household's toilet facility is classified as hygienic if it is used only by household members (i.e., not shared) and if it effectively separates human waste from human contact. The types of facilities that are most likely to accomplish this are flush or pour flush toilets emptying into a piped sewer system/septic tank/pit latrine; ventilated, improved pit (VIP) latrines; pit latrines with a slab; and composting toilets (*http://www.wssinfo.org/definitions-methods/watsan-categories/*).

Table 3.1.2.2: Household Sanitation

	Improved sanitation[1]		Garbage[2]				Sample Size
	Not shared	Shared	Collected	Thrown into a pit	Bury	Burn	
Region							
Sughd	25.2	1.5	40.2	27.8	13.5	16.3	1,497
Khatlon	14.9	3.8	13.3	61.3	14.4	9.4	3,535
Total	19.2	2.8	24.5	47.4	14.0	12.2	5,032

Table 3.1.2.2: Household Sanitation

[1]) Improved sanitation includes flush to piped sewer system, septic tank or pit latrine, ventilated improved pit latrine, pit latrine with slab and composting toilet [2]) Excluded category is 'thrown into public area'.

The baseline survey data shows a major difference in access to improved sanitation compared to TjDHS2012. In TjDHS2012 the most common type of toilet is a pit latrine with slab whereas the baseline IE data shows a pit latrine without a slab as the most common type. The slab makes the difference between improved and

non-improved sanitation. TjDHS2012 shows 93.4 percent of households (see also section on external validity) have access to improved and non-shared sanitation. The baseline IE shows that less than 20 percent of the households have access to improved non-shared sanitation.

3.1.3 Wealth Index

For the purpose of the remaining analysis, a wealth index is created using principal component analysis (PCA). Included in the PCA are dummy variables for the following housing characteristics that are believed to represent wealth:

- Type of dwelling
- Number of room per adult equivalent
- Main material used for walls, rooftop, and floor
- Access to improved source of water
- Access to improved sanitation facilities: Shared or non-shared
- Source of energy: For lighting, cooking and heating
- Durable goods

Based on the wealth index, wealth quintiles were calculated by ranking each households by their score, and then divide the ranking into five equal categories, each including approximately 20 percent of the weighted sample. It is important to note that the wealth index is defined relative to the sample and is not nationally representative. However, the wealth index will serve the purpose of assessing inequality in access to health care for the IE sample.

Table 3.1.3.1: Wealth Quintiles	Lowest	Second	Middle	Fourth	Highest
Region					
Sughd	12.8	14.8	18.6	22.7	31.1
Khatlon	25.1	23.6	21.0	17.5	12.8
Nationality					
Tajik	21.6	20.0	21.1	19.0	18.2
Uzbek	17.9	19.6	18.6	20.5	23.3
Sample					
Recent pregnancy	18.8	20.4	19.7	20.2	20.8
Adult 40+	20.2	20.0	19.6	19.8	20.4
Sample Size	1,057	1,063	1,071	926	915

Table 3.1.3.1: Wealth Quintiles

31 percent of households in Sughd are ranked in the highest wealth quintile, whereas this is 13 percent of households in Khatlon. 70 percent of households in Khatlon falls in the middle or lower wealth quintiles. According to the wealth index created for TjDHS2012, Khatlon is considered as a poorer region than Sughd with 32.5 percent in the poorest quintile. TjDHS2012 also observe wealth differences within regions with the highest Gini coefficient observed in the Khatlon region (0.30), indicating that this region has the most inequitable wealth distribution.

For the IE sample, the Uzbek minority in Tajikistan is ranked relatively more wealthy compared to Tajiks. The two selected samples are close to equally distributed over the wealth quintiles.

3.1.4 Health Related Financial Shock

The main household questionnaire asks about health related financial shocks. Thirty-five percent of the households report to have had health expenditures that were higher than they could afford with the usual income in the past 12 months. This does not seem to be more common for households in the poorest wealth quintiles. However, it is a bit more common for households in the 2nd and 3rd quintile compared to the forth and highest quintile. The difference is more pronounced across regions, with 26 percent of households in Sughd compared to 41 percent in Khatlon that have had experienced a health related financial shock.

Among households that experienced a health related financial shock, 28 percent had to sell their possessions, 23 borrowed money, and 5 percent received help in form of money as a gift.

Table 3.1.4.1: Health Related Financial Shock (in past 12 months)	Health related financial shock	Sample Size	Sell any possessions	Borrow money	Received money as a gift	Conditional Sample Size
Region						
Sughd	26.4	1,497	31.6	21.0	4.8	409
Khatlon	40.9	3,535	26.4	24.0	4.8	1,463
Wealth Quintiles						
1st	33.5	1,057	26.6	29.5	6.2	380
2nd	37.0	1,063	23.0	16.9	3.8	397
3rd	36.1	1,071	31.6	26.9	8.2	413
4th	33.6	926	29.9	20.0	3.5	353
5th	34.2	915	29.4	22.3	2.2	329
Total	34.9	5,032	28.1	23.1	4.8	1,872

Table 3.1.4.1: Health Related Financial Shock

3.2 Maternal Health

Maternal health refers to the health of women during pregnancy, childbirth and the postpartum period. For this section, we use the sample of women with a live birth in the 2 years preceding the survey[2] and exclude women who were pregnant at the time of the survey. If the woman had more than one live birth in the period, we use the most recent one.

3.2.1 Antenatal Care

Antenatal care (ANC) from a skilled health professional is important in order to monitor the status of a pregnancy, identify the complications associated with the pregnancy, and prevent adverse pregnancy outcomes. Pregnant women should have regular ANC throughout the pregnancy. World Health Organization (WHO) recommends that a pregnant woman should have at least four ANC visits (WHO, 2007). The following table presents information on the number of ANC visits and the timing of the first and last visit. 12 percent of the women in Khatlon had no ANC visit at all. In Sughd, the level is only 2 percent with no ANC visit. Almost sixty percent had four or more ANC visits during their pregnancy; out of which 23 percent had 7 or more ANC visits. Conditional on at least one skilled ANC visit, 29 percent initiated antenatal care after the first trimester of their pregnancy.

Table 3.2.1.1: ANC	ANC visit		Number of visits		Timing[2]				Number & timing[3]	Sample Size
	Received ANC	Received skilled[1] ANC	Number of visits	At least 4 visits	Months pregnant at first visit	First visit in first trimester	Months pregnant at last visit	Last visit in last month of pregnancy		
Region										
Sughd	97.7	97.6	6.3	85.9	3.3	78.7	8.2	71.5	66.8	609
Khatlon	88.2	87.9	4.0	45.6	3.4	66.8	8.0	44.0	28.4	1701
Age										
<21	95.2	95.2	5.1	67.9	3.4	69.5	8.0	53.2	43.1	154
21-25	92.7	92.7	4.9	61.7	3.3	73.9	8.1	54.6	44.2	732
25-30	91.9	91.6	4.8	59.6	3.4	69.3	8.0	53.1	42.5	832
31-35	87.6	87.3	4.7	52.1	3.3	72.2	8.1	55.6	39.3	381
>35	87.4	86.7	4.4	50.5	3.3	65.6	8.0	50.2	34.3	211
Education										
Less than completed primary school	89.0	88.5	4.3	49.3	3.4	66.4	7.7	47.6	33.9	358
Completed primary school	88.5	88.5	4.9	56.3	3.3	70.2	8.1	52.6	40.7	674
Completed secondary school	93.7	93.5	4.9	62.5	3.4	73.2	8.1	55.6	44.0	954
Higher than secondary school	99.7	99.7	6.1	90.4	3.1	73.7	8.4	72.3	67.9	88

[2] Live births from 2013, 2014, and 2015 are used

Birth Order[4]										
1st	95.7	95.7	5.2	68.3	3.3	72.1	8.1	56.2	46.5	651
2nd	91.3	91.1	4.8	59.2	3.3	73.6	8.1	54.8	43.2	691
3rd	90.7	90.4	4.8	55.3	3.5	67.8	8.1	54.8	42.1	496
4th	85.7	85.1	4.4	51.9	3.3	70.5	7.8	49.4	34.8	263
5+	84.4	84.4	4.0	43.1	3.4	66.0	7.9	42.1	27.9	209
Wealth quintile										
1st	83.2	82.4	4.5	44.1	3.3	71.6	8.0	51.5	36.9	445
2nd	87.1	86.9	4.2	48.9	3.4	69.6	8.0	51.4	32.5	441
3rd	91.6	91.5	4.6	57.2	3.3	69.7	8.0	49.9	39.8	528
4th	95.9	95.9	4.9	61.2	3.4	67.4	8.2	53.0	40.5	460
5th	96.6	96.5	5.7	80.0	3.3	76.9	8.1	62.0	57.2	436
Total	91.3	91.1	4.8	58.9	3.3	71.0	8.1	53.8	42.0	2,310

Table 3.2.1.1 ANC:

[1]) Skilled ANC is defined by a visit attended by either a hospital doctor, family doctor, private doctor, specialist at PHC, obstetrician/gynecologist, family nurse, Feldsher, or midwife. [2]) The timing indicators are conditional on at least one skilled ANC visit. [3]) The number & timing indicator show the level of women receiving at least four ANC visits and the first visit in the first trimester conditional on at least one skilled ANC visit. [4]) Birth order does not count stillbirths

ANC indicators vary across background characteristics. Only 83 percent of women in the lowest wealth quintile had at least one ANC visit and the four-visit coverage level differs with 36 percentage points from the lowest quintile to the highest. First visit within first trimester also varies across wealth quintiles, however less so. It is more likely for younger women to receive an ANC visit. On average, women less than 21 receive 0.7 more visits than women above 35 do, and the level for at least four visits is 17 percentage points higher for the youngest group compared to the oldest. ANC indicators also vary across educational level, with 99.7 percent of women with higher than secondary level of education receiving at least one skilled ANC visit, 90 percent with four visit coverage, and 74 percent with their first visit in the first trimester. Note, that this is a group of only 88 women; however, the tendency is observed for increasing educational level. First time pregnancy is also associated with increased utilization level.

The table also shows that 91 percent of mothers reported at least one ANC visit for the most recent live birth in the two-year period before the survey. Out of these, more than five in six women visited a doctor—either their family doctor (10 percent), hospital doctor (4 percent), a specialist (23 percent), an obstetrician or gynecologist (48 percent). The share that visited a family doctor in Sughd is significantly higher than in Khatlon, 23 percent against 3 percent (data not shown). In Khatlon, 13 percent went to a midwife compared to 6 percent in Sughd (data not shown). Most women, 61 percent, went to the rural health center for ANC, followed by 14 percent who went to a district hospital and 14 percent to a health house.

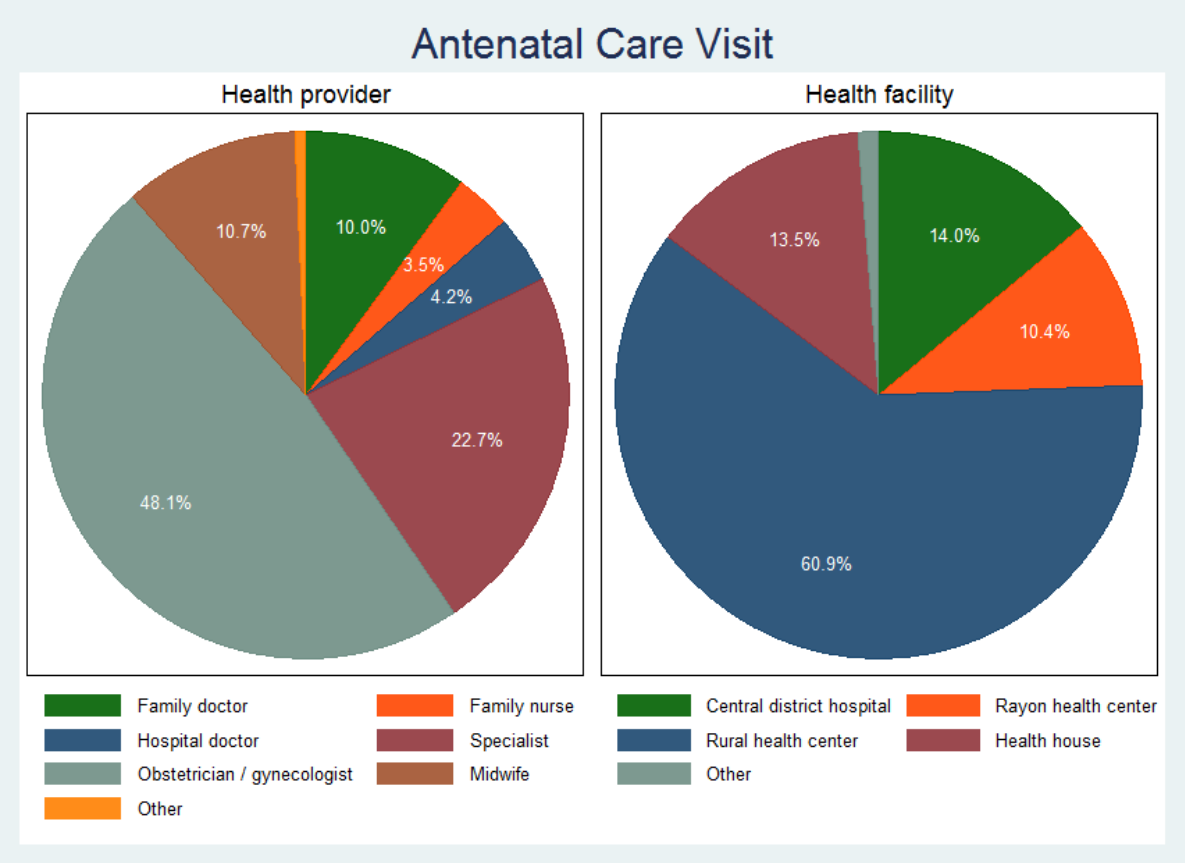


Figure 3-2: Antenatal Care Visit

Figure 3-3 shows the distribution of the timing of first antenatal care visit. While 70 percent of women who received at least one ANC visit had their first visit within the first trimester, nearly 30 percent had their first ANC visit after the first trimester.

Figure 3-4 shows in more detail the distribution of the number of ANC visits. About 40 percent had less than the four visits recommended by the WHO and less than 25 percent had seven or more visits, as recommended by the Tajik Ministry of Health guidelines.

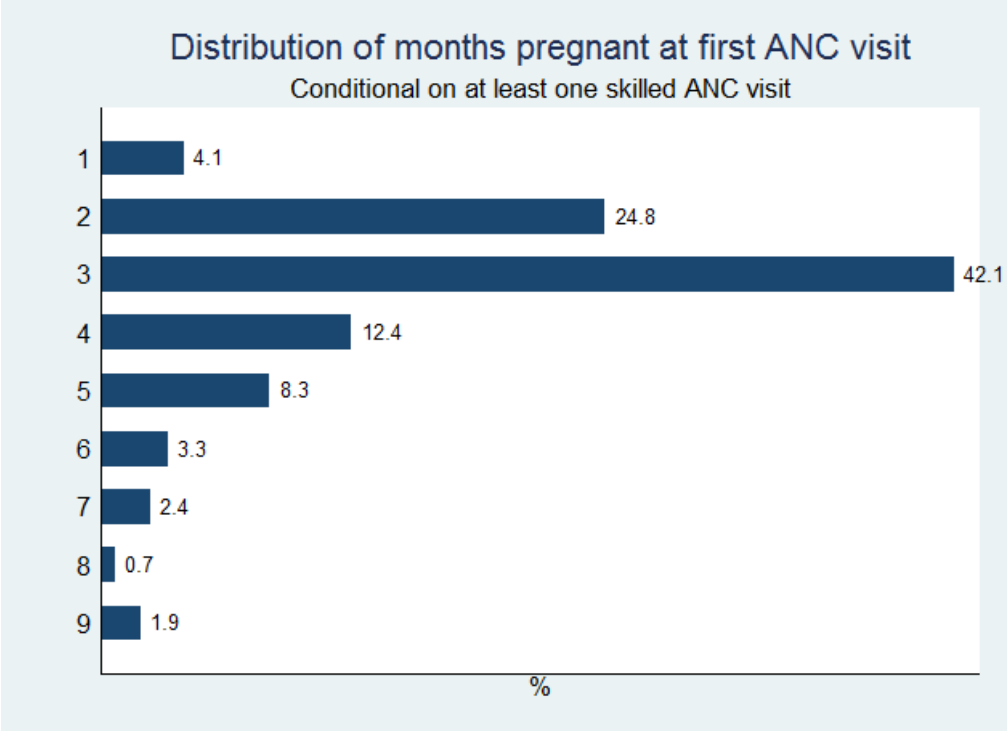


Figure 3-3: Distribution of months pregnant at first ANC visit

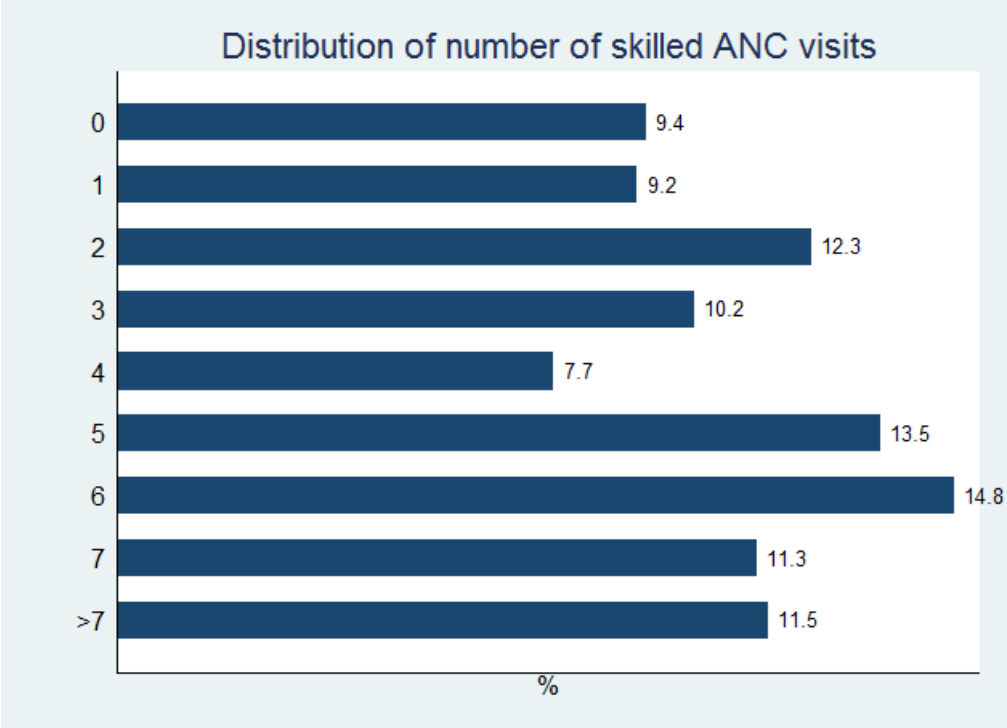


Figure 3-4: Distribution of number of ANC visits
If first ANC visit is by a skilled health provider, any subsequent visit is assumed to be skilled.

In terms of the content of the antenatal care, the following figure shows that most important tasks were done in more than 95 percent of the cases in Sughd. The two least frequently tasks done are a) schedule of the delivery (92 percent) and b) receiving advice on diet (90 percent). In Khatlon, the levels are overall lower;

for example, one in five women do not receive advice on what to do in case of an emergency. Overall, Sughd scores 96 percent on the content of care index (simple average across the 12 tasks) and Khatlon 87 percent. This could be interpreted as, on average, more than 11.5 out of 12 selected tasks are done in Sughd and 10.4 out of 12 in Khatlon. Difference in the height of bars represents difference in ANC levels across the two regions.

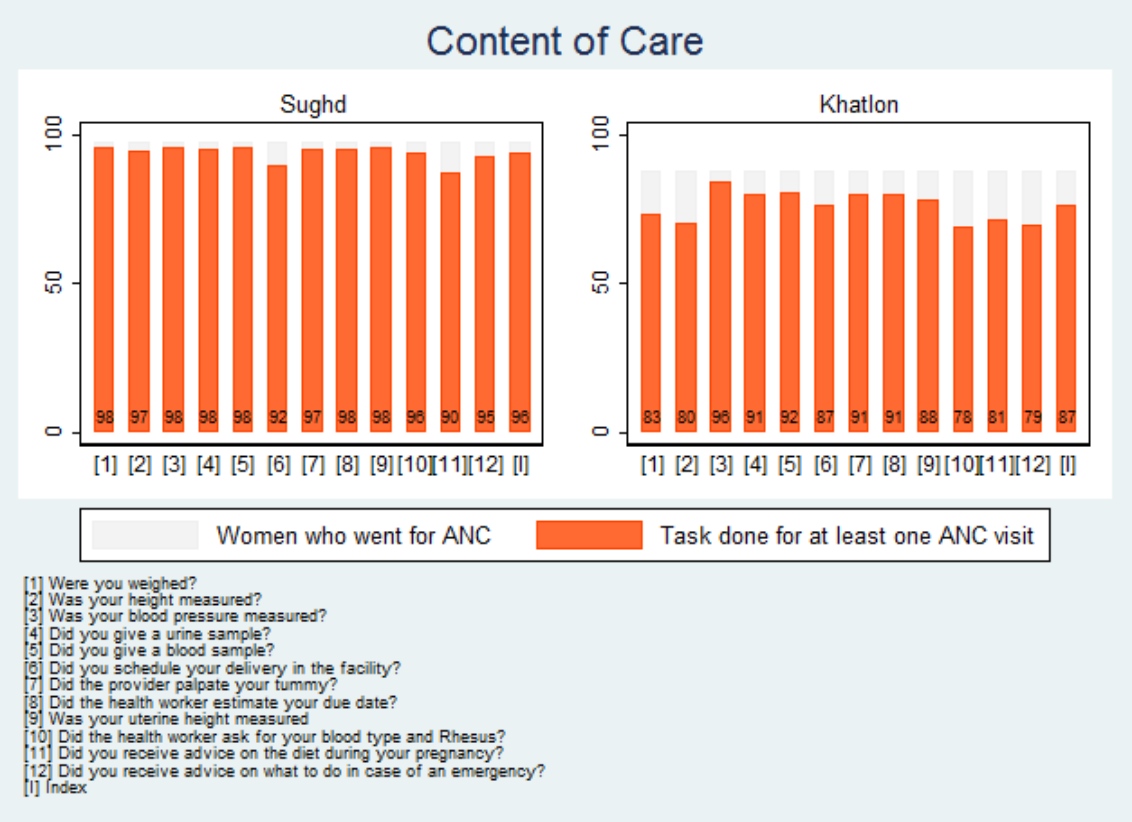


Figure 3-5: Content of Care

94 percent of women in Sughd, who went for an ANC visit, were offered counseling and testing for HIV - 82 percent in Khatlon. 97 percent of women offered testing were also tested and received the result (data not shown).

A little more than half of women took iron supplements during the pregnancy. However, the average number of days is only around one month. WHO guidelines recommend daily oral iron and folic acid supplementation as part of the antenatal care to reduce the risk of low birth weight, maternal anemia and iron deficiency.

Table 3.2.1.2: HIV and iron supplementation	Offered counseling and testing for HIV	Iron supplementation	Number of days with iron	Sample Size
Region				
Sughd	94.3	54.0	25.1	331
Khatlon	81.7	52.2	31.4	791
Total	86.2	52.8	29.2	1,122

Table 3.2.1.2: HIV and iron supplementation.
The sample is conditional on at least one ANC visit.

To address factors that potentially prevent women from receiving ANC during their pregnancy, the household survey asks those women that did not have an ANC in a formal health facility, why they did not go. Recall that overall, 9 percent of pregnant women did not go to a health facility for ANC. However, this is the case for 3 percent in Sughd and 11 percent in Khatlon. The difference is shown by the height of the bars in figure 3-6. The figure also shows that women in Khatlon more often report that it is too expensive (57 percent) to have an ANC visit. 24 percent said that it was too far, whereas 16 percent went to a traditional healer.

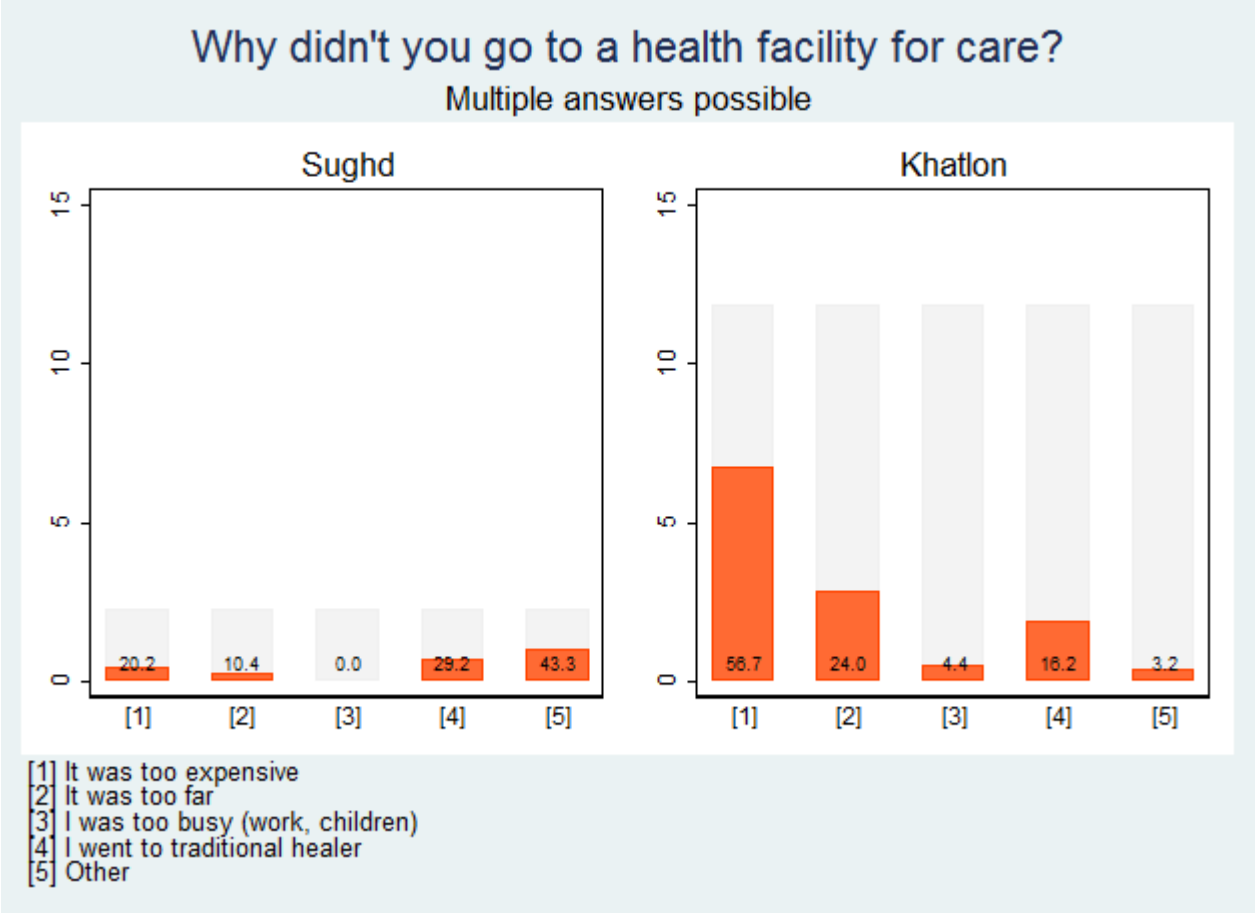


Figure 3-6: Why didn't you go to a health facility for care?

3.2.2 Postnatal Care

The research team found inconsistencies with respect to reporting on postnatal care, most likely arising from misunderstanding of the definition of postnatal care and the design of the questionnaire. The women were first asked whether a health professional checked on their health after giving birth. The questionnaire included instructions for the enumerators to specify that the checks were carried by health professionals within three days after the birth at home or after coming from the maternity hospital. The following question simply asked about how many postnatal checkups the women received. In that question, the term 'postnatal checkup' was used without any clarification. Some respondents answered positively to the first question and later said they had zero postnatal checkups. It could be that the general term postnatal checkup could be understood as checkups conducted just after delivery in the facility where the birth took place. Therefore, we do not present reporting on postnatal consultations in detail.

The first column in the table below indicates the percentage of women that reported having a health professional check on them within three days after the birth at home or after coming from the maternity hospital. The second column presents the percentage of women who reported having any postnatal care in the two months following the birth. In cases in which the women reported to not having had any postnatal checkups but having been checked on by a health professional within three days after delivery, the women were recorded to receive postnatal care. Overall, about 63 percent of the women received postnatal care in the first three days after leaving the facility where they gave birth. The rate is higher in Sughd (76.4%) than it is in Khatlon (56.2%) and it increases with education and wealth. The rate reduces with birth order.

Table 3.2.2.1: PNC	Any PNC in first 3 days	Any PNC in first two months	Sample Size
Region			
Sughd	76.4	83.1	609
Khatlon	56.2	67.8	1701
Age			
<21	66.8	78.5	154
21-25	64.6	74.3	732
25-30	64.5	73.0	832
31-35	55.4	66.6	381
>35	59.8	73.8	211
Educational level			
Less than completed primary school	46.9	58.0	416
Completed primary school	66.5	75.3	770
Completed secondary school or higher	66.5	77.0	1,119
Birth Order			

	1st	66.8	76.2	651
	2nd	63.6	73.0	691
	3rd	62.3	70.9	496
	4th	56.2	68.6	263
	5+	56.5	71.3	209
Wealth quintile				
	1st	57.0	69.6	445
	2nd	60.3	71.2	441
	3rd	58.5	69.5	528
	4th	62.8	72.1	460
	5th	74.9	81.7	436
Total		62.9	72.9	2,310

Table 3.2.2.1: PNC

Only 9 percent of the women report to have had any iron tablets or iron syrup or folic acid after the birth and only 8 percent report to have received a vitamin A dose in the two months after the birth (data not shown).

The following table shows some indicators for breastfeeding practice. 98 percent of the women ever breastfed their child and on average this was initiated 12 hours after the birth with some variation across region and wealth quintile. 41 percent initiated breastfeeding within the first hour, and this was the case for 60 percent of the women in Sughd and 32 percent of the women in Khatlon.

Table 3.2.2.2: Breastfeeding practice	Ever breastfed		Initiated (hours on average)	Initiated within first hour	Sample size
	Level	Sample Size			
Region					
Sughd	97.4	609	7.0	59.5	594
Khatlon	98.3	1,701	14.5	32.4	1,674
Age					
<21	97.6	154	9.3	48.6	150
21-25	97.5	732	11.8	43.1	718
25-30	99.0	832	11.9	42.4	822
31-35	97.7	381	13.9	34.1	373
>35	96.6	211	12.5	37.4	205
Mother's educational level					
Less than completed primary school	97.3	416	11.8	43.3	406
Completed primary school	98.4	770	11.9	39.4	760
Completed secondary school or higher	98.0	1,119	12.2	42.1	1,097
Wealth Quintile					
1st	98.8	445	15.2	31.9	439
2nd	96.8	441	14.4	33.2	430

	3rd	98.6	528	12.0	41.3	519
	4th	97.7	460	12.1	41.8	452
	5th	98.1	436	7.2	56.2	428
Total		98.0	2,310	12.0	41.3	2,268

Table 3.2.2.2: Breastfeeding practice

3.2 Fertility Preferences and Family Planning

This section looks at fertility preferences and family planning. The focus of the IE is on maternal and newborn care and therefore the main sample includes households with recent pregnancies. When analyzing fertility preferences, the population of interest is often, like in the DHS, all women aged 15-49, or alternatively all currently married women aged 15-49. Households with recent births tend to be overrepresented by women in childbearing age, which is likely to affect fertility preferences and family planning. In addition, the IE is not implemented in the main towns where fertility is also expected to be lower. Consequently, this analysis should not be thought of as representative for all women aged 15-49 and is therefore not directly comparable to the representative TjDHS2012. However, the IE includes an additional sample of household with adults above 40 in one third of the project districts. In Tajikistan, 88 percent of women aged 15-49 lives in households with at least one adults 40+ (TjDHS2012) compared to only 38 percent of women aged 15-49 living in households with a recent pregnancy. This sample therefore provide an opportunity to explore a bit further fertility preferences in rural areas of Sughd and Khatlon. However, the main objective is to show a baseline level for the impact evaluation to explore the need for family planning, which is one of the indicators in the PBF project.

For the analysis presented below, we use the ever-pregnant sample from the pooled data (households with recent pregnancies and households with adults over 40) and keep in mind that the sample selection affects the age distribution and the fertility. We further exclude women currently pregnant from the sample. The following table shows number of pregnancies, number of live births and number of living children for the selected sample.

Table 3.2.1: Fertility	Number of pregnancies	Number of live births	Number of living children	Sample Size
Age Group				
15-19	1.2	1.2	1.2	51
20-24	1.6	1.6	1.5	983
25-29	2.5	2.4	2.4	1,202
30-34	3.4	3.3	3.1	736
35-39	3.8	3.7	3.5	462
40-44	4.4	4.3	3.8	308
45-49	4.9	4.7	3.7	463
Total	3.1	3.0	2.7	4,205

Table 3.2.1: Fertility

Data on fertility preferences and contraceptives helps to understand the demand for family planning. Due to the selection of the IE sample, we will not estimate an unmet demand for family planning. However, we will provide some basic information about fertility preferences and contraceptive use.

The following tables shows a potential level of need for family planning. 22 percent of the sample would wait more than two years until the birth of the next child, and 37 percent would not have more children.

Table 3.2.2: Fertility preferences	If you could choose for yourself, how long would you wait from now until the birth of your next child?	Sample Size

	Would not wait	Less than two years	More than two years	No more children	Have not decided	
Region						
Sughd	6.8	4.0	19.9	46.2	18.8	1,108
Khatlon	15.5	6.5	22.6	31.3	21.1	3,097
Age Group						
15-19	19.4	14.8	37.0	3.6	25.3	51
20-24	13.9	9.8	35.7	9.1	30.7	983
25-29	17.2	7.0	28.6	17.7	28.2	1,202
30-34	12.8	4.1	22.4	39.2	18.9	736
35-39	7.6	2.0	8.3	64.8	13.3	462
40-44	8.0	2.4	5.7	67.3	8.5	308
45-49	6.2	2.6	7.5	69.6	4.3	463
Number of living children						
1	18.5	9.7	29.1	11.2	26.4	997
2	12.0	6.0	30.3	25.9	22.8	1,100
3	10.3	3.4	20.7	41.7	20.9	938
3+	9.1	3.5	8.5	63.1	12.6	1,170
Total	12.3	5.6	21.6	36.8	20.3	4,205

Table 3.2.2: Fertility preferences

Forty-none percent of the sample approves of contraceptives, 32 percent currently uses contraceptives, and 30 percent currently uses some kind of modern contraceptives. The level of approval and use is considerable higher in Sughd compared to Khatlon and seems also to be lower for younger age groups compared to older. These indicators are not found to be correlated with education level. However, both use and approval of contraceptives increase with wealth.

Table 3.2.3: Contraceptives	**Approve of contraceptives**	**Currently using any FP method**	**Currently using modern FP**	**Sample Size**
Region				
Sughd	62.5	44.4	39.2	1,060
Khatlon	41.1	25.5	24.5	3,048
Age Group				
15-24	40.7	18.6	15.9	1,027
25-29	44.5	26.7	23.9	1,198
30-34	55.0	44.3	40.6	729
35-39	57.6	51.3	50.4	449
40-44	60.2	46.3	42.5	291
45-49	47.7	23.6	22.8	414
Educational Level				
Less than completed primary school	47.9	26.4	24.9	711
Completed primary school	49.3	33.5	32.3	1,269
Completed secondary school or higher	49.1	33.6	30.0	2,120
Wealth quintiles				
1st	41.8	26.3	24.7	775

	2nd	45.2	26.1	24.6	809
	3rd	48.7	33.6	31.5	923
	4th	54.4	39.2	34.1	830
	5th	52.9	34.9	32.8	771
Fertility Preferences					
	Would not wait	21.4	11.9	11.2	533
	Would wait less than 2 years	38.5	17.8	16.9	268
	Would wait more than 2 years	59.4	30.9	23.7	933
	Would not have any more children	63.2	49.7	47.7	1,359
Total		48.9	32.4	29.9	4,108

Table 3.2.3: Contraceptives.
2.3 percent of the sample did not answer questions about contraceptives

Among women that want to wait more than two years for the next child, almost 60 percent approve of family planning but only 24 percent use any modern family planning methods. Among women that would not have any more children, 63 percent approve of the use of contraceptives and 48 percent currently uses any modern method.

The following figure shows the choice of contraceptives, given that the woman is using any method. Twelve percent of contraceptive users in Sughd use a traditional method.

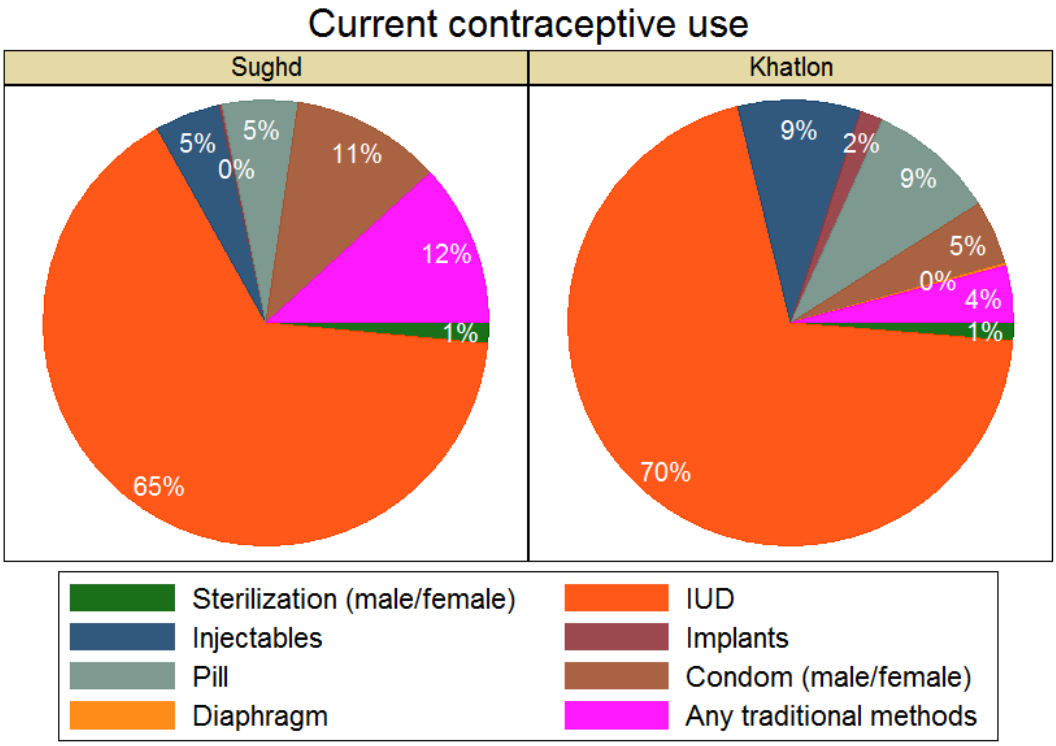


Figure 3-7: Current Contraceptive Use

The questionnaire also asks women for the reason they are not using contraceptive methods. Lactational amenorrhea is the most common answer, provided by about 40 percent of the women. The second most frequent answer is lack of approval, provided by 16 percent of the women. An additional 8 percent report that they don't use contraceptives due to lack of approval by their partners.

Table 3.2.4: Reasons for not using contraceptives	Why are you currently not using any method to delay or avoid getting pregnant?[1]							Sample Size
	Would like to get pregnant	Does not approve	Partner or family does not approve	Not available or too expensive	Scared of side-effects	No knowledge of any method	Lactational amenorrheas	
Region								
Sughd	9.6	13.3	9.6	0.6	7.2	2.8	39.9	657
Khatlon	16.0	16.9	6.7	1.6	3.4	3.6	40.0	2,301
Age Group								
15-24	16.4	8.6	6.5	0.9	1.7	2.1	59.1	856
25-29	18.1	11.7	6.1	0.9	3.2	2.8	50.9	896
30-34	17.2	18.1	8.8	1.3	4.0	1.7	39.8	453
35-39	8.9	27.3	8.4	1.1	8.3	5.7	22.5	261
40-44	7.5	25.6	8.4	3.0	6.2	10.4	10.4	182
45-49	4.7	23.6	10.9	2.0	10.5	3.1	6.8	310
Education								
Less than completed primary school	17.0	15.8	7.2	1.6	4.6	3.5	39.3	535
Completed primary school	15.1	15.3	6.5	0.9	3.6	3.3	44.5	886
Completed secondary school or higher	12.5	16.1	8.4	1.4	5.0	3.3	37.7	1,531
Wealth quintiles								
1st	11.3	19.8	5.5	2.4	6.6	4.2	36.8	594
2nd	15.5	19.6	7.5	2.1	3.2	4.1	38.1	618
3rd	13.1	18.0	11.5	1.0	2.9	3.8	37.2	650
4th	15.3	13.2	8.0	0.5	5.5	1.8	42.8	573
5th	15.2	8.4	5.2	0.4	4.6	2.8	44.9	523
Fertility Preferences								
Would not wait	39.8	15.0	3.7	1.9	0.6	7.6	24.4	473
Would wait less than 2 years	23.8	8.2	6.2	0.9	2.1	3.8	49.2	222
Would wait more than 2 years	13.4	7.4	6.4	0.9	3.0	1.0	62.4	688
Would not have any more children	2.1	23.2	12.3	1.6	8.7	4.6	20.7	750
Total	14.1	15.8	7.6	1.3	4.6	3.4	39.9	2,958

Table 3.2.4: Reasons for not using contraceptives.

[1]) *Omitted category is 'other'*

3.4 Child Health

This section uses the sample of all children less than 5 years from household selected for a recent pregnancy and households selected for an adult 40+.

3.4.1 Growth Monitoring and Nutritional Status

According to Tajik guidelines, growth monitoring should be conducted once a month in the first year of life, once per quarter in the second year, every six months in the third year, and once a year during the fourth and fifth year of life.

The table below reports if children under-5 were measured to determine their nutritional status in the six months prior to the survey. It also reports the results of the measurements and if care was obtained when it was necessary. Overall, 14.5 percent of the children were measured during the specified time period. The rate is highest for children during their first year of life. Rates of growth monitoring increase with wealth.

The result of the growth measurement were (according to the mothers) in 63.6 percent of the cases green (child is well nourished), in 4.7 percent of the cases yellow (the child is at risk for acute malnutrition), and 0.9 percent of the measured children were categorized as red (indicates severe acute malnutrition). 30.7 percent does not know or recall the result of the growth monitoring.

For children with a yellow or red nutritional status, the questionnaire asks if the child obtained any specialized care for malnutrition. This was the case for 11.9 percent of the children.

Table 3.4.1.1: Growth Monitoring (mother's report)	Measured in past 6 months		Result					Obtained care	
	Level	Sample Size	Well nourished (Green)	In danger (Yellow)	Severely malnourished (Red)	Don't know	Sample Size	Level	Sample Size
Region									
Sughd	26.1	2,416	53.4	4.2	0.5	41.9	670	10.9	314
Khatlon	7.9	6,024	82.8	5.8	1.5	9.9	473	17.5	67
Age									
<1 year	22.4	1,970	67.3	5.2	0.1	27.5	424	14.0	137
1-2y	15.0	2,031	62.0	5.7	1.2	31.1	292	18.7	97
2-3y	14.1	1,683	62.5	6.7	1.2	29.6	201	7.0	70
3-4y	7.7	1,450	61.7	3.3	2.1	33.0	112	10.8	39
4-5y	10.3	1,306	58.9	0.0	1.1	40.0	114	2.5	38
Mother's educational level									
Less than completed primary school	15.9	2,147	78.4	3.7	1.2	16.7	292	11.2	59
Completed primary school	11.8	2,439	59.9	3.4	1.5	35.2	263	13.8	89
Completed secondary	15.4	3,778	57.4	6.0	0.4	36.2	577	11.4	229

school or higher									
Wealth Quintile									
1st	5.3	1,619	75.8	6.0	0.5	17.7	122	17.8	31
2nd	12.4	1,725	69.4	3.2	0.7	26.8	190	6.1	51
3rd	18.2	1,877	57.3	5.0	0.9	36.7	275	4.6	87
4th	16.9	1,610	70.1	2.8	1.8	25.4	248	10.3	87
5th	18.3	1,609	57.7	6.8	0.3	35.2	308	21.6	125
Total	14.5	8,440	63.6	4.7	0.9	30.7	1,143	11.9	381

Table 3.4.1.1: Growth Monitoring

Included in the household survey is also anthropometric data that allows assessing nutritional status of the children independent of mother's recall. The data includes a measure of height of all children less than 5 years. The measure is recorded in cm with one decimal precisions and it is noted if the child was measured in standing position or lying. In addition, weight of all children less than 5 was also collected. Children less than age three were weighed together with their caregiver, usually their mother. Caregiver's weight was recorded in kg with one decimal precision (she was weighed one time). Child and mother were weighed together 3 times (the average was used for the indicators). Children more than 3 years were weighed 3 times without their caregiver. Height and weight were measured for 6,959 children as part of the household survey.
Growth indicators were calculated using WHO Anthro (version 3.2.2, January 2011) for STATA and indicators were defined based on WHO standards.

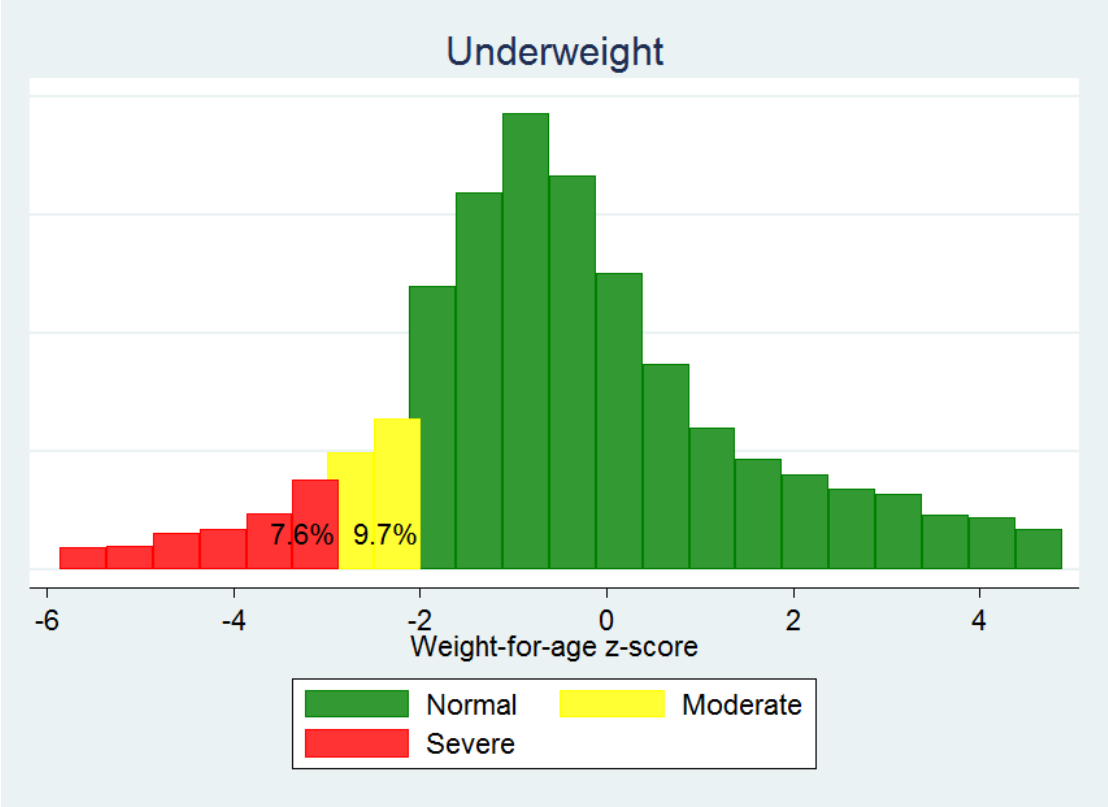


Figure 3-8: Distribution of weight-for-age z-score

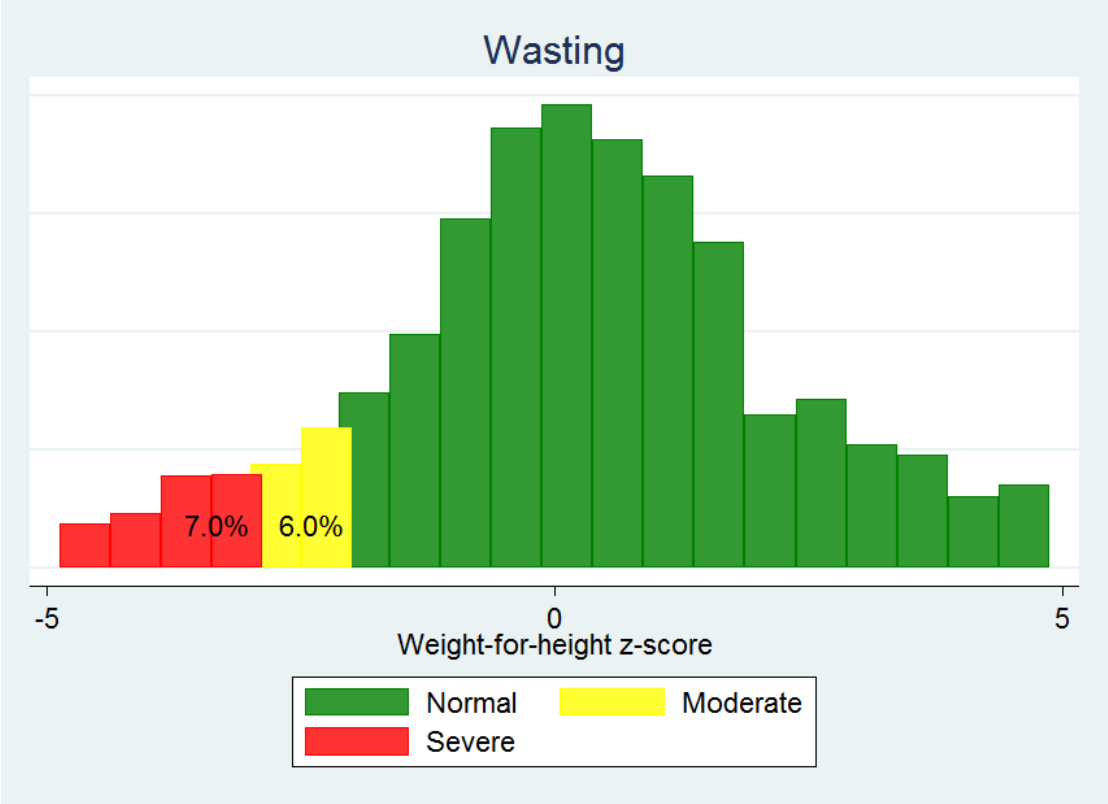


Figure 3-9: Distribution of weight-for-height z-score

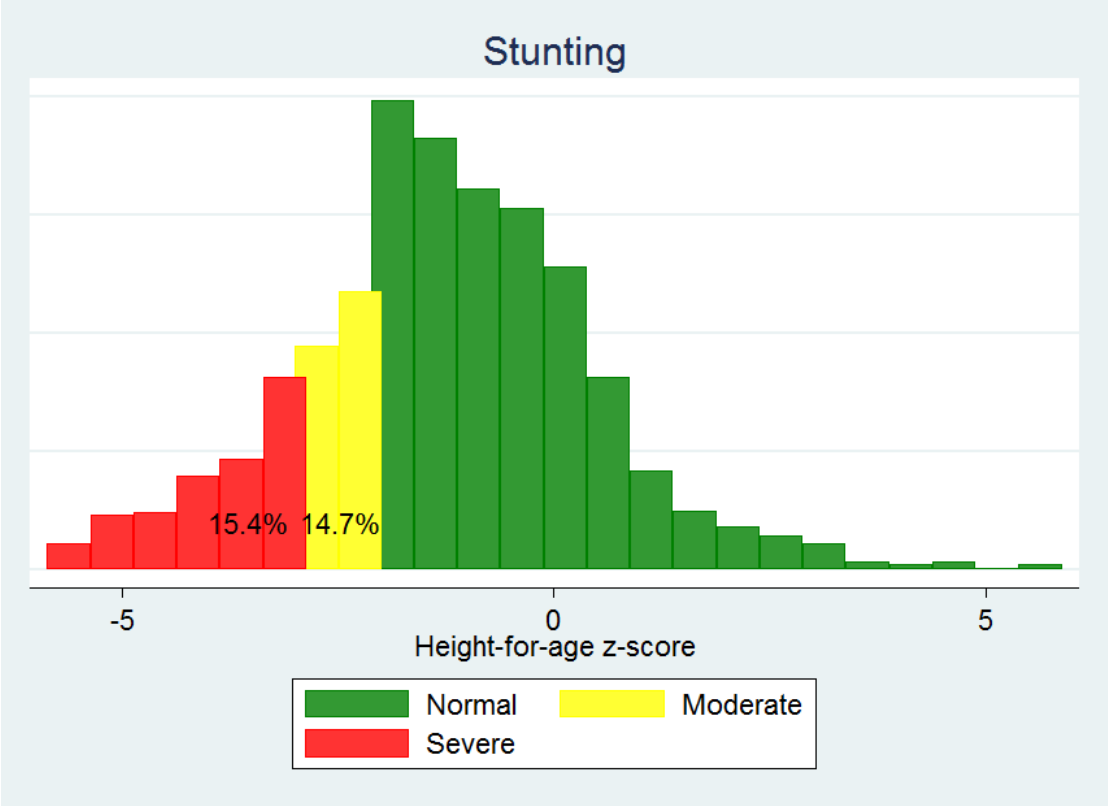


Figure 3-10: Distribution of height-for-age z-score

Table 3.4.1.2: Nutritional Status	Underweight[1]		Wasting[2]		Stunting[3]		Sample Size
	Moderate (<-2SD)	Severe (<-3SD)	Moderate (<-2SD)	Severe (<-3SD)	Moderate (<-2SD)	Severe (<-3SD)	
Region							
Sughd	15.9	7.2	10.6	6.2	29.0	14.5	1,976
Khatlon	18.1	7.8	14.7	7.6	30.8	15.9	4,983
Age							
<1 year	9.3	2.5	13.4	6.6	17.5	8.7	1,588
1-2y	17.4	8.6	18.2	10.5	28.0	12.9	1,721
2-3y	28.9	14.3	19.4	11.6	37.1	19.3	1,382
3-4y	16.2	7.8	8.1	4.0	35.0	16.5	1,198
4-5y	15.4	6.1	7.4	3.2	37.5	22.4	1,070
Mother's Educational Status							
Less than completed primary school	18.5	9.5	13.4	7.7	31.1	17.3	1,686
Completed primary school	17.8	6.7	14.1	6.3	29.5	12.9	2,107
Completed secondary school or higher	16.3	7.1	12.3	7.2	29.9	16.1	3,112
Wealth quintile							
1st	18.2	8.7	16.8	8.0	33.7	16.5	1,310
2nd	20.5	9.4	12.2	7.9	28.7	16.0	1,397
3rd	14.8	6.5	12.1	5.5	34.8	18.6	1,545
4th	17.7	7.1	15.2	9.0	28.1	12.0	1,348
5th	15.6	6.6	10.0	5.2	26.2	14.0	1,349
Total	17.3	7.6	13.0	7.0	30.1	15.4	6,959

Table 3.4.1.2: Nutritional status

The sample includes all children less than 5 with a consent. [1]) Moderate and severe underweight were categorized based on weight-for-age z-score.9 percent of the observations were flagged based on the WHO rule and removed from the sample [2]) Moderate and severe wasting were categorized based on weight-for-height z-score. 10 percent of the observations were flagged based on the WHO rule and removed from the sample [3]) Moderate and severe stunting were categorized based on height-for-age z-score.26 percent of the sample were flagged based on the WHO rule and removed from the sample.

3.4.2 Nutrition and feeding practice

The following table shows that 6 percent of the sample of children aged 6-59 months were given iron in the past 7 days before the survey, 11 percent of the children were given deworming medicine in the past 6 months before the survey, and 61 percent were given vitamin A supplement.

Table 3.4.2.1.: Micronutrient intake (Children aged 6-59 months)	Iron in the past 7 days	Drug for intestinal worms in the past 6 months	Vitamin A in the past 6 months[1]	Sample Size

Region					
	Sughd	3.9	10.8	60.8	2,231
	Khatlon	7.2	11.5	60.9	5,515
Age					
	<1 year	7.1	3.5	55.2	1,273
	1-2y	7.8	7.6	61.8	2,032
	2-3y	5.2	12.8	62.8	1,683
	3-4y	5.0	14.1	61.8	1,450
	4-5y	4.8	17.9	61.4	1,308
Mothers educational level					
	Less than completed primary school	7.9	8.5	52.3	1,968
	Completed primary school	6.5	12.4	63.1	2,242
	Completed secondary school or higher	4.9	12.0	64.0	3,466
Wealth quintile					
	1st	5.1	11.4	60.0	1,476
	2nd	5.2	14.9	62.6	1,587
	3rd	6.0	9.7	63.6	1,729
	4th	6.8	11.8	55.0	1,482
	5th	6.8	8.7	62.8	1,472
Total		6.0	11.2	60.9	7,746

Table 3.4.2.1:Micronutrient intake

[1]) Vitamin A is asked in the section of the questionnaire with vaccination coverage. Reported in the table is the level based on mother's recall. This means that 2 percent of the sample is missing and an additional 8 percent report that they don't know.

As a global public health recommendation, infants should be exclusively breastfed for the first six months of life to achieve optimal growth, development and health. This is defined as no other food or drink, not even water, except breast milk for 6 months of life, but allows the infant to receive ORS, drops and syrups (vitamins, minerals and medicines).

Figure 3-11 shows that 49 percent of children age 0-5 months had plain water the day before the interview and 8.2 percent had milk (other than breast milk). This finding is consistent with the TJDHS 2012 that reports the average duration of exclusive breastfeeding in the country to

be about two months. The total median duration of predominant breastfeeding however is five months.

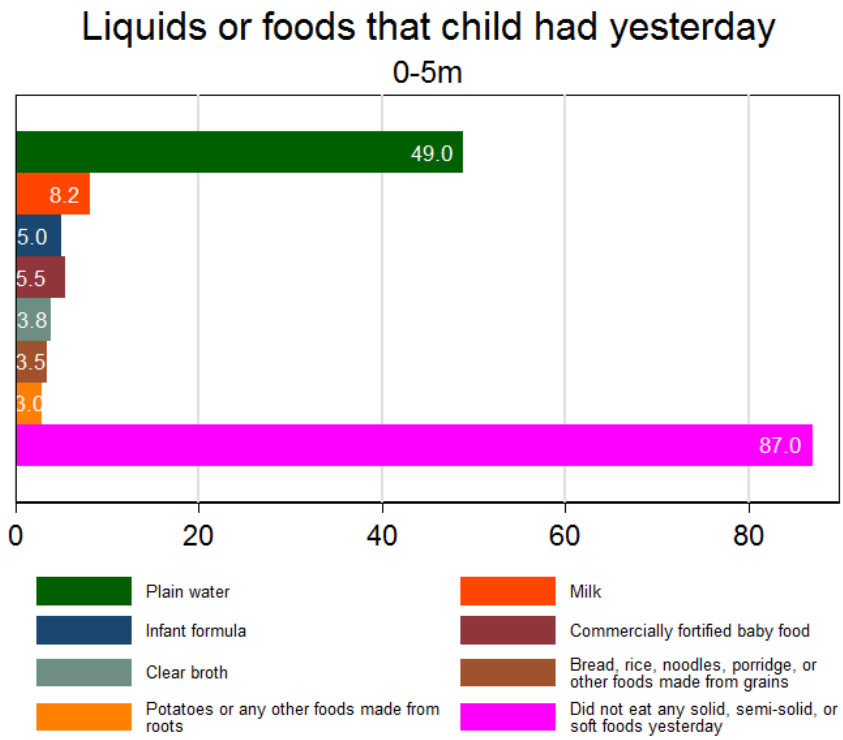


Figure 3-11: Liquids or food that child had yesterday (children less than 6 months)

The amount of food is recommended to increase gradually from 6 to 23 months. 24.7 percent of children age 6-23 months and 6.2 percent of children age 24-59 months did not eat any solid, semi-solid, or soft foods the day before the interview.

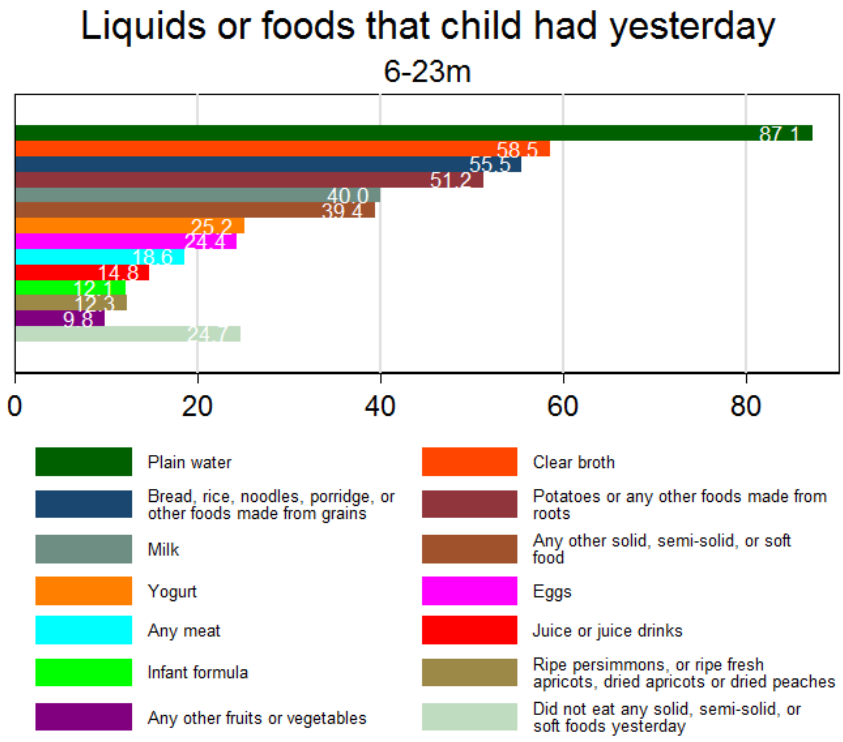


Figure 3-12: Liquids or food that child had yesterday (children 6-23 months)

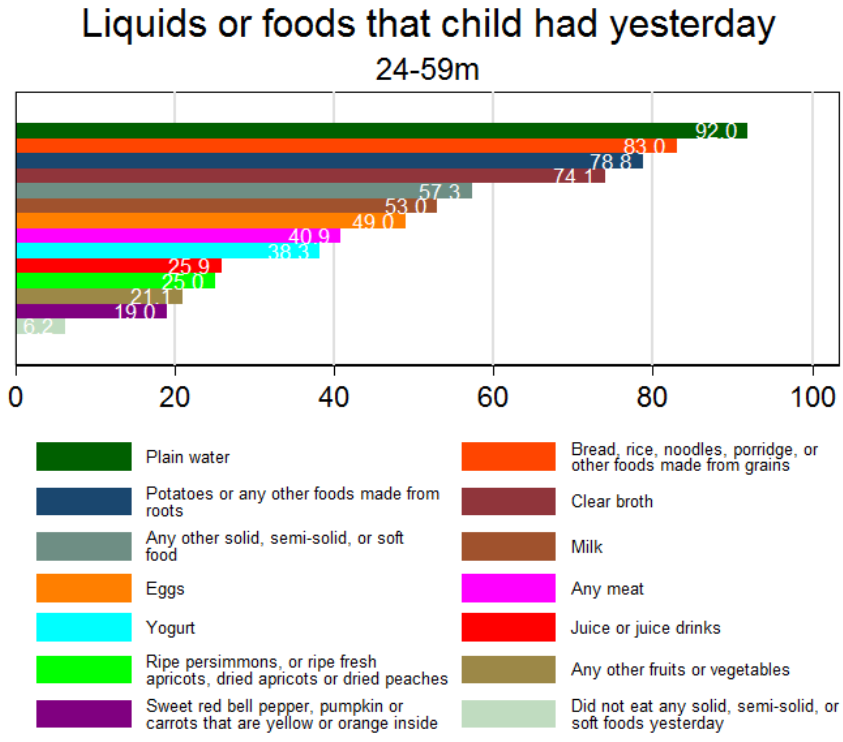


Figure 3-13: Liquids or food that child had yesterday (children 24-59 months)

3.4.3 Vaccination coverage

The Ministry of Health in Tajikistan has adopted the World Health Organization (WHO) guidelines for childhood immunizations: a BCG vaccination against tuberculosis; three doses of pentavalent to prevent diphtheria, pertussis, tetanus, hepatitis B, and Hemophilus influenza type B; three doses of polio vaccine; and a measles vaccine during the first year of life.

Information on vaccination coverage was collected in the household survey for all children under age 5. In Tajikistan, vaccinations card are normally maintained in the local health facilities. In 7.3 percent of the cases, the mother was able to show the child vaccination card to the interviewer. For these cases, the dates of vaccinations were collected. Otherwise, the mother was asked to recall her child's immunizations. For the TJDHS2012 survey, the survey team went to the health facility to obtain information from the vaccination card. This means that the estimate obtained for the IE sample (mostly based on mothers recall) is not fully comparable to the estimate from TjDHS2012 (mostly based on vaccination card). The level estimated based on the IE sample is found to be considerably lower than the level from the TJDHS. This difference is assumed to reflect the recall bias.

Table 3.4.3.1 below shows the percentage of children under 5 years whose vaccination cards were seen or not seen by the household survey team, or who were reported to not have a vaccination card. Twenty-six percent of the children had no vaccination card at the time of survey.

Table 3.4.3.1: Vaccination Card	Sughd	Khatlon	Total
Yes (seen)	14.1	3.4	7.3
Yes (not seen)	51.5	75.5	66.8
No	34.4	21.1	25.9
Sample Size	2,416	6,028	8,444

Table 3.4.3.1.: Vaccination Card

The questionnaire asks for a DPT vaccine (to prevent diphtheria, pertussis, and tetanus) instead of pentavalent. However, the research team assumes that this level corresponds to the level of pentavalent given.

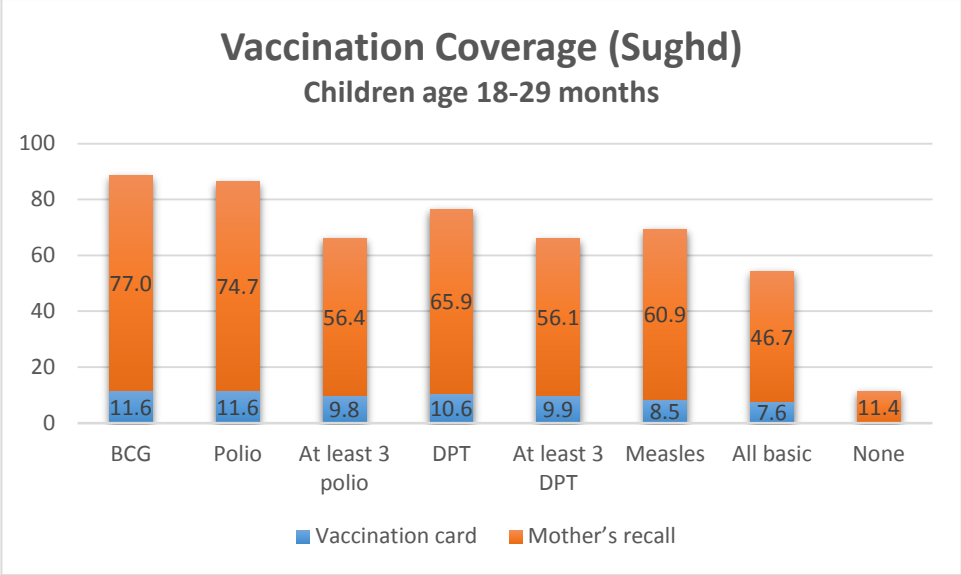


Figure 3-14: Vaccination Coverage (Sughd)
This figure includes the sample of children in Sughd age 18-29 months. The level is based on 62 observations from a vaccination card and the remaining 445 observations are the mothers' recall.

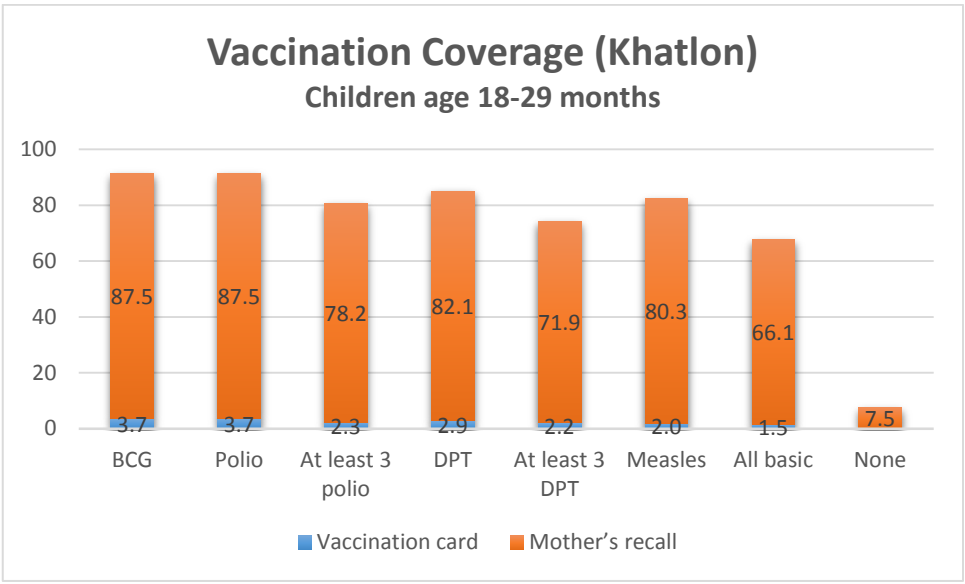


Figure 3-15: Vaccination Coverage (Khatlon)
This figure includes the sample of children in Khatlon age 18-29 months. The level is based on 57 observations from a vaccination card and the remaining 1347 observations are the mothers' recall.

3.5 Adult Health

Cardiovascular diseases accounts for 38 percent of all deaths annually in Tajikistan (World Health Organization - Noncommunicable Diseases (NCD) Country Profiles, 2014). High blood pressure or hypertension is among the major risk factors for cardiovascular disease.

3.5.1 Self-Reported Hypertension

In the household questionnaire, all adults above the age of 18 are asked if they have high blood pressure. The following figure shows the level of self-reported hypertension for (a) age groups within regions, and (b) age groups for each gender.

It is important to keep in mind that the *self-reported* hypertension status may depend on different propensities of getting tested among different groups as well as potentially different reporting patterns. Therefore, this indicator should be interpreted carefully.

More people in Sughd report to be hypertensive compared to Khatlon. Thirteen percent of the adult sample in Sughd reports being hypertensive, 9 percent in Khatlon. Older adults are more likely to report being hypertensive, and older women are more likely to report being hypertensive than their male counterparts are.

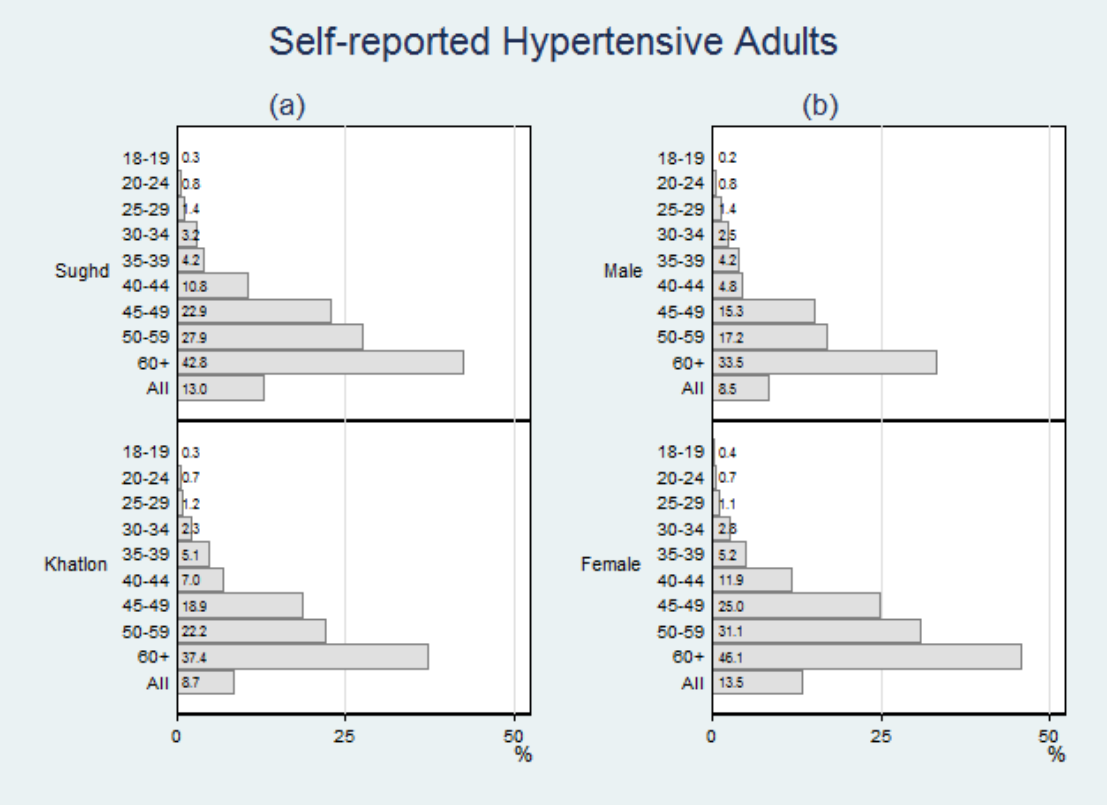


Figure 3-16: Self-reported Hypertensive Adults

Eleven percent of the self-reported hypertensive sample report that they diagnosed it themselves. The remaining 89 percent were diagnosed by a health professional. Seventeen percent reported having been admitted to a hospital primarily as a result of hypertension in the past 12 months.

The following table shows, among those who reported to be hypertensive, the percentage of those who were medicated for the condition and the percentage who took the medication in the 24 hours preceding the survey. 86 percent of the hypertensive adults reported obtaining medication with 80 percent obtaining the drugs with a prescription (as reported in the parentheses). 68 percent reported taking medication in the prior 24 hours but only 39 percent reported taking all of the suggested drug treatment (as reported in the parentheses).

Table 3.5.1.1: Pharmaceutical treatment	Medication (with a prescription)	Sample Size	Medication in last 24 hours (all of it)	Sample Size
Region				
Sughd	86.0 (79.9)	718	61.8 (43.0)	627
Khatlon	86.7 (79.8)	1,384	74.2 (35.5)	1,204
Gender				
Male	82.6 (77.5)	699	70.2 (42.4)	584
Female	88.7 (81.3)	1,403	67.3 (37.1)	1,247
Age				
18-39	65.1 (57.2)	216	59.0 (32.2)	154
40-59	87.4 (80.2)	1,046	63.0 (34.0)	929
60+	90.7 (85.5)	840	77.3 (46.8)	748
Educational level				
Less than completed primary school	88.2 (81.1)	601	70.4 (41.7)	514
Completed primary school	87.3 (80.9)	557	74.6 (43.6)	483
Completed secondary school or higher	84.7 (78.5)	933	63.4 (34.5)	825
Wealth quintile				
1st	85.0 (81.4)	328	63.0 (32.3)	276
2nd	81.5 (74.3)	387	70.0 (28.3)	333
3rd	82.9 (75.7)	497	75.4 (50.9)	420
4th	91.6 (83.9)	434	62.9 (33.4)	392
5th	90.3 (84.2)	456	68.6 (44.1)	410
Total	86.4 (79.8)	2,102	68.4 (39.0)	1,831

Table 3.5.1.1: Pharmaceutical treatment

When those who did not take the full drug treatment were asked to provide reasons for not adhering to the suggested treatment, the most common response was that the respondents felt well and did not see the need to take. This response was provided by more than three quarter of respondents. The second most common response was running out of medication. In figure 3-17, the height of the bars shows the level of adults with high blood pressure who did not take the full drug treatment; 47 percent in Sughd and 36 percent in Khatlon.

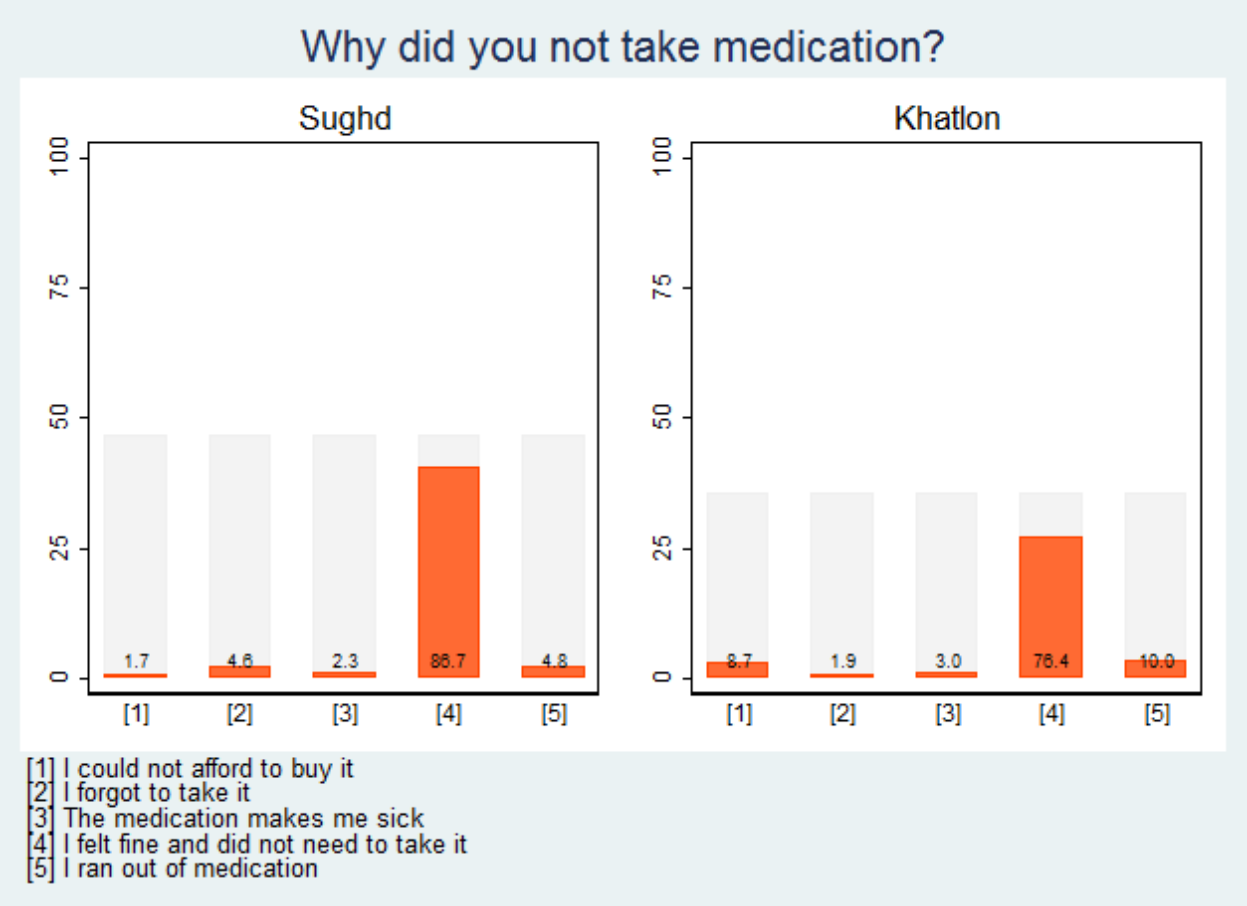


Figure 3-17: Why did you not take medication?

An important part of the treatment of hypertension is non-pharmaceutical treatment, such as advice on behavioral changes. The following figure shows the level of advice given for selected categories as well as the level of behavioral changes for those same categories. In cases in which specific behavioral changes were not relevant to the respondent, the response was recorded as 'not applicable.'

66 percent in Sughd received advice on using less salt whereas 41 percent also changed their behavior accordingly. 24 percent in Sughd received advice on drinking less alcohol whereas 12 percent changed behavior. However, the figure also shows that the level for drinking less alcohol is partly explained by respondent indicating that the behavioral change is not applicable.

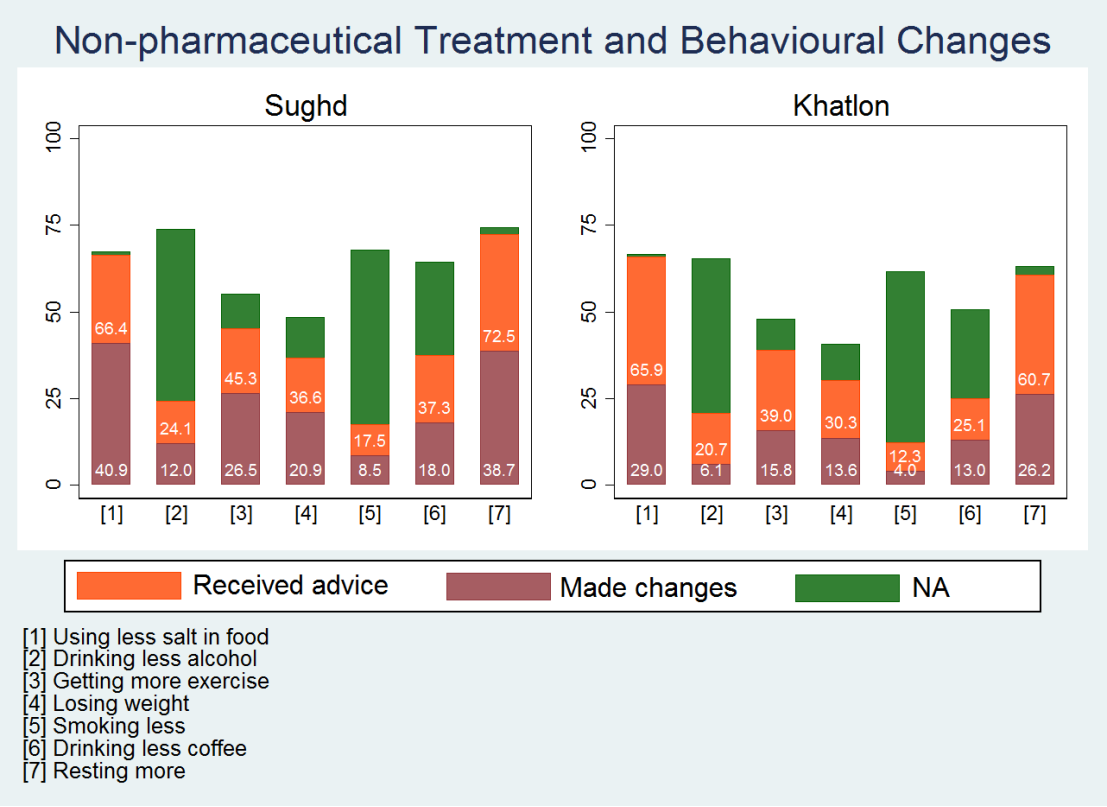


Figure 3-18: Non-pharmaceutical Treatment and Behavioral Changes

The figures below present the time since last blood pressure test and the location of the last blood pressure test for the self-reported hypertensives. Forty-eight percent had their blood pressure tested within the past week and an additional 27 percent were tested within the past month. About three percent were tested more than one year ago and ten percent do not remember when they were tested last. The most common place of testing is at home, during a home visit of a health provider. Thirty-two percent reported having their blood pressure tested during home visits while 29 percent reported having been tested in rural health centers.

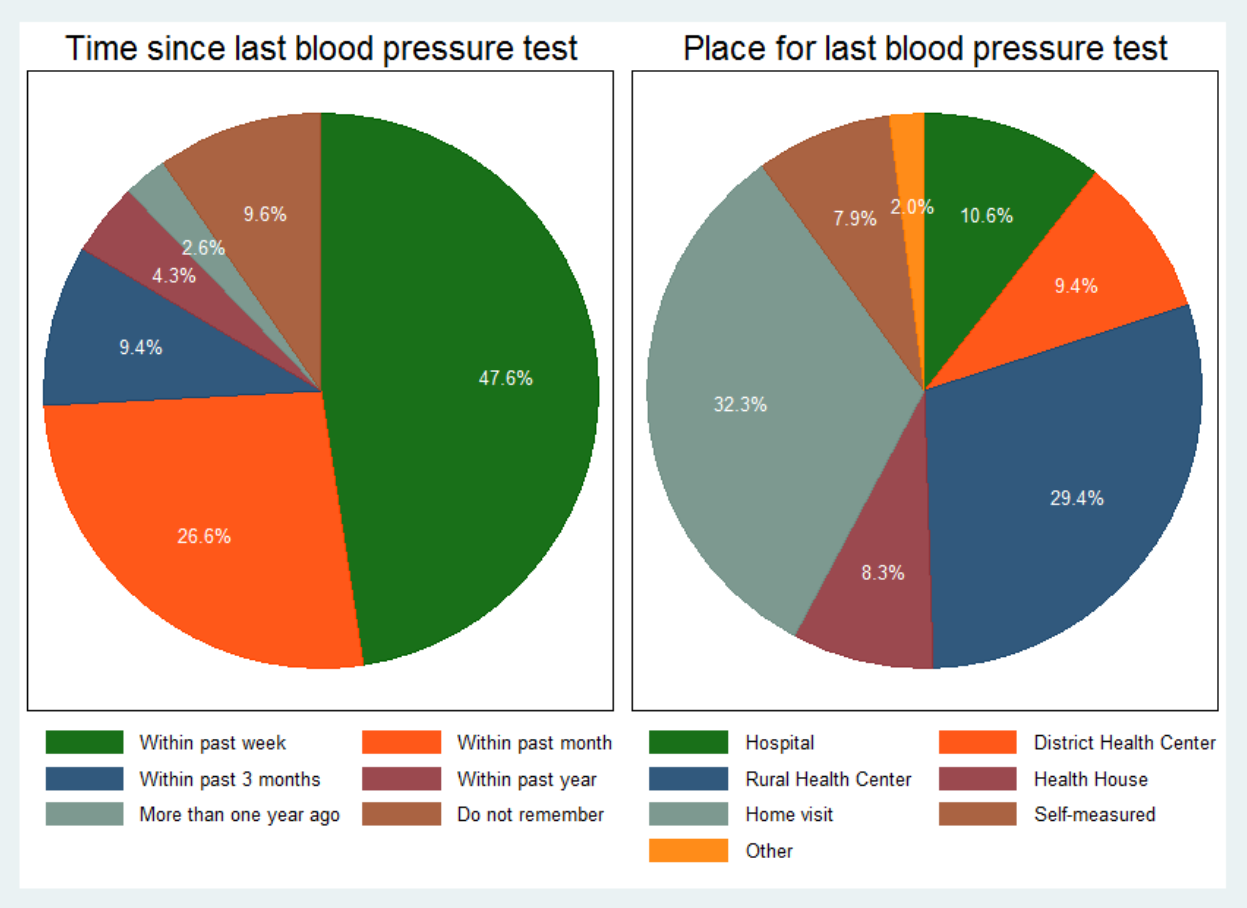


Figure 3-19: Blood pressure test
a) Time since last blood pressure test b) Place for last blood pressure test.
The sample includes adults with high blood pressure

The following table uses the sample of adults who do not report to have high blood pressure. In order to prevent high blood pressure, it is still important to be tested regularly in order to detect an increase. In Tajikistan, it is recommended adults above 40 to be tested at least once a year.

Table 3.5.1.2: Blood Pressure Test	Time since last blood pressure test			Place for last blood pressure test (conditional)				Sample Size
	Within last year	Within last 5 years	More than 5 years or never	Hospital or district health	Rural health center	Health House	Home visit	
Region								
Sughd	38.0	6.9	55.1	19.8	32.5	19.1	27.1	4,769
Khatlon	36.8	8.3	54.9	22.1	35.0	10.3	31.4	12,692
Gender								
Male	26.1	9.3	64.7	19.0	31.9	14.6	32.4	7,296

Female	48.8	6.3	44.9	22.5	35.3	13.2	28.1	10,165
Age								
18-39	34.2	8.0	57.8	23.4	36.5	14.6	24.0	12,049
40-59	43.2	7.7	49.1	17.2	31.0	13.0	37.7	4,061
60+	47.8	5.6	46.6	18.5	25.7	9.8	44.6	1,351
Educational level								
Less than completed primary school	30.2	8.3	61.5	21.9	31.3	7.2	39.4	4,479
Completed primary school	42.5	7.7	49.8	22.8	33.7	13.1	28.9	4,039
Completed secondary school or higher	38.1	7.5	54.4	20.3	35.2	16.1	26.8	8,902
Wealth quintile								
1st	35.1	8.5	56.3	18.6	41.7	14.6	23.5	3,323
2nd	36.0	8.5	55.5	18.7	36.8	18.1	25.1	3,718
3rd	36.5	8.2	55.3	22.7	32.1	14.4	29.1	3,764
4th	36.2	6.9	56.9	20.2	33.8	13.0	32.2	3,374
5th	42.2	6.9	50.9	24.9	28.0	9.2	36.5	3,282
Total	37.3	7.8	54.9	21.2	34.0	13.7	29.7	17,461

Table 3.5.1.2: Blood Pressure Test
The sample includes adults who do not report to have high blood pressure.

3.5.2 Hypertensive Adults (Blood Pressure Test)

The following section reports results of blood pressure tests conducted in the context of the household survey by the field teams. The household survey measured blood pressure for all adult household members aged 18 or older. 11,928 adults agreed to receive a blood pressure measurement with a signed consent. This represents a 61% acceptance rate. 11,497 had three valid readings on the day of interview. The figure below shows the distributions of the three systolic and diastolic blood pressures measure.

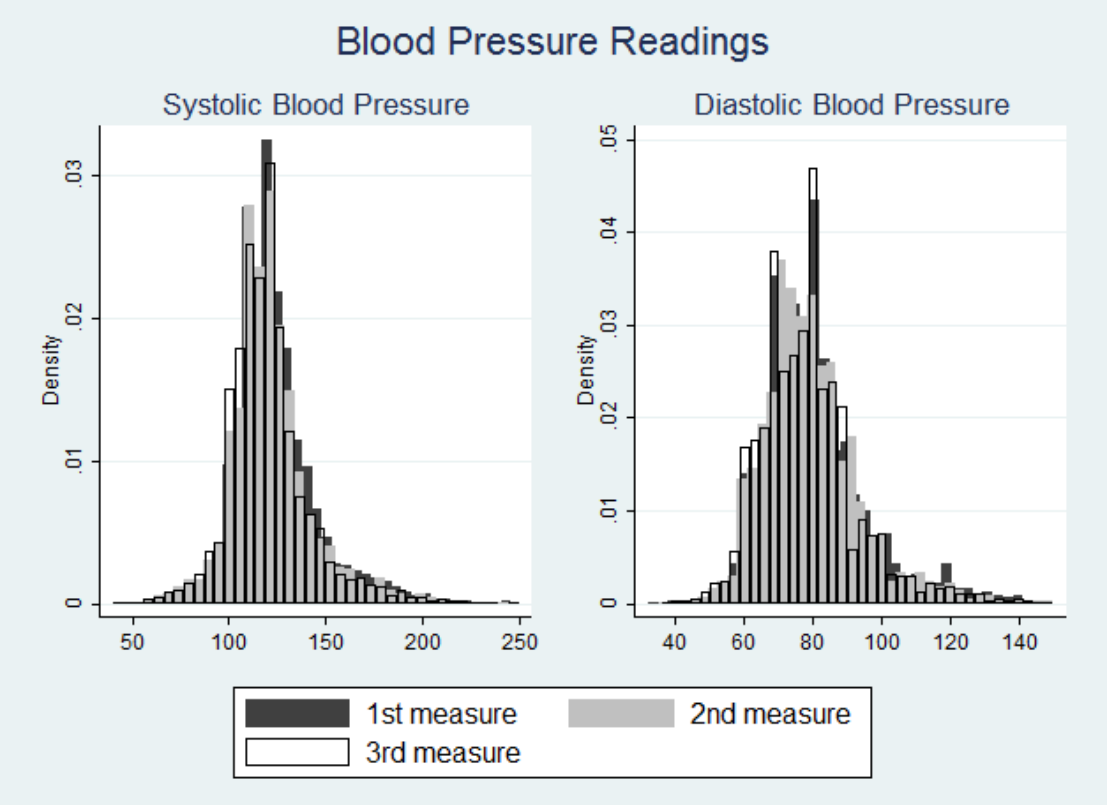


Figure 3-20: Blood Pressure Readings

The figure below portrays the distribution of the sample in terms of four hypertension categories: normal, prehypertension, stage 1 hypertension and stage 2 hypertension. For the classification, the lowest systolic and diastolic readings out of the three readings were used. 17.4 percent of the tested adults fell into the stage 1 or 2 hypertension categories, 32.3 percent were found to be in the prehypertension category and 50.3 percent were in the normal blood pressure category.

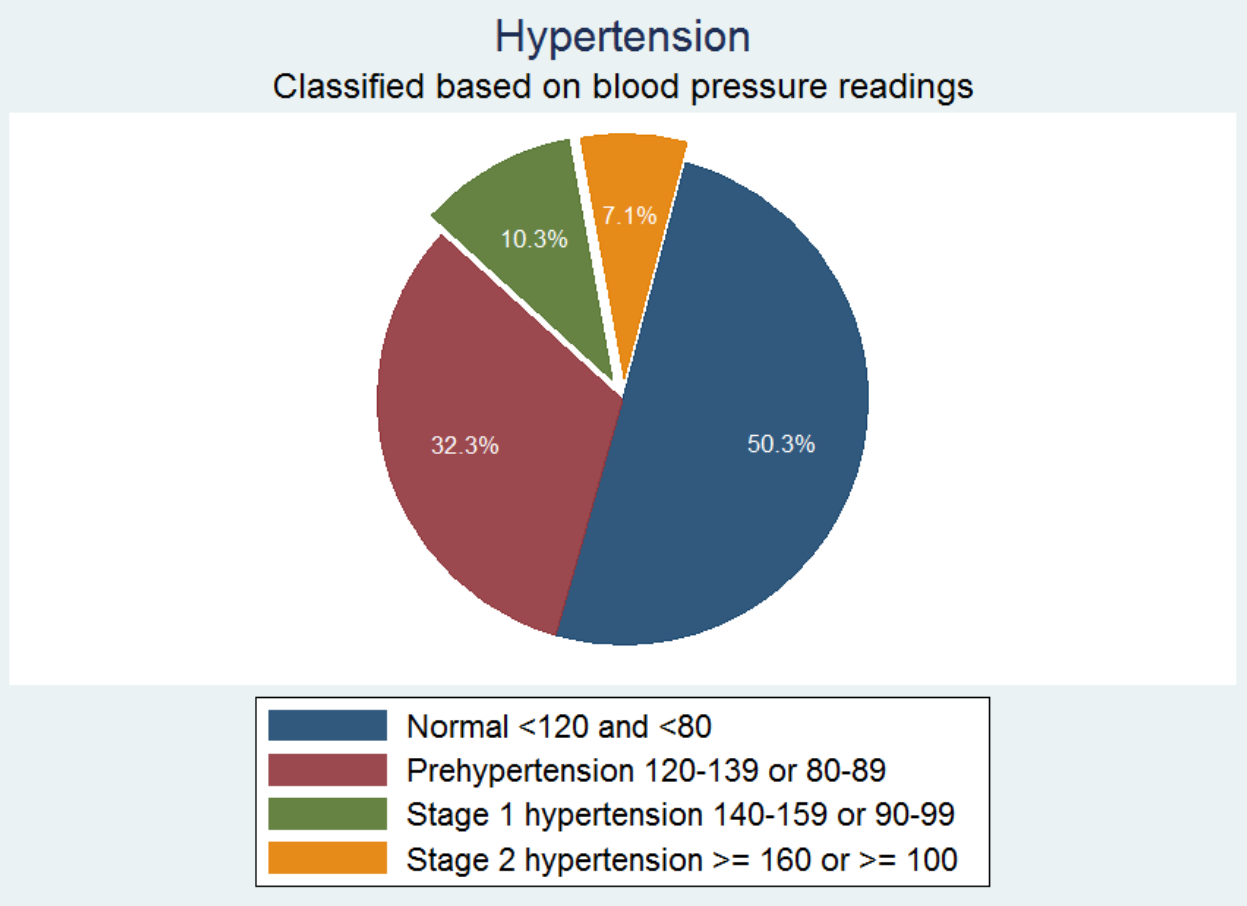


Figure 3-21: Hypertension (Classified based on blood pressure readings)

The figure below shows hypertension rates (stage 1 or 2 hypertension) in age groups by region and gender. As expected, hypertension rates increase with age. Hypertension rates for males were higher than those for females, especially for age groups below 50. The percent of hypertensive adults is a bit higher in Sughd region with 19.5 percent in comparison to 15.5 percent in Khatlon. Note that hypertension rates from direct measurements are different from the self-reported rates presented in figure 3-16. For example, in the self-reported rates, hypertension was higher for older women compared to men but it is not the case when considering the BP tests performed.

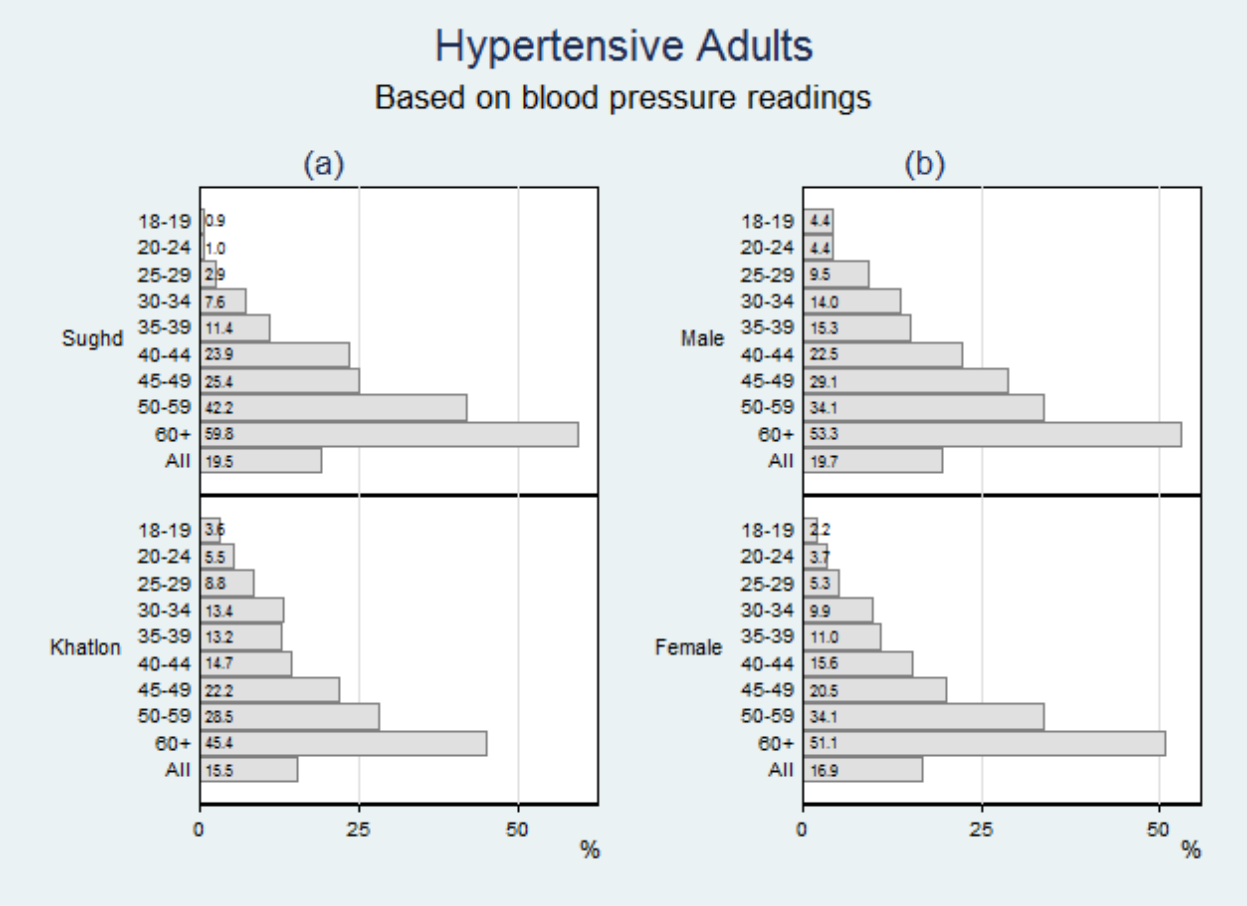


Figure 3-22: Hypertensive Adults by (a) Region and (b) Gender

Out of the 2,172 with high blood pressure readings, 865 (around 40 percent) self-reported to have high blood pressure. 1,245 reported no high blood pressure and additional 62 reported not knowing. It is important to keep in mind, though, that our blood pressure tests were conducted in one day. To be diagnosed as hypertensive, individuals need to consistently be measured with high blood pressure.

3.5.3 Other Cardiovascular Risk-Related Indicators

Other important adult health indicators that were collected through the baseline survey relate to weight, and alcohol and tobacco consumption. These measures represent additional risk factors for cardiovascular diseases. These additional health indicators were only collected for the additional NCD sample of adults above age 40.

The table below presents self-reported weight and height of adults over 40. The Body Mass Indicator (BMI) measure is calculated and the percentage of the adults that fall into the overweight and obese categories are reported. As with the self-reported high blood pressure measures, these indicators should be interpreted carefully. According to the heights and weights reported by the sample, almost half of the sample has excess weight with 32.5 percent falling in the overweight category and 17.4 percent in the obese category. Excess weight is slightly higher among men relative to women and significantly higher in Sughd relative to Khatlon.

Table 3.5.3.1: Weight and Height	Height (m)	Weight (kg)	BMI	Normal (BMI<25)	Overweight (BMI 25-30)	Obesity (BMI>30)	Sample Size
Region							
Sughd	1.65	72.3	26.8	42.7	31.3	26.1	605
Khatlon	1.65	68.1	25.1	54.9	33.3	11.8	1,277
Age							
40-59	1.65	70.0	25.6	51.6	33.0	15.4	1,388
60+	1.64	69.5	26.3	45.0	30.7	24.3	494
Gender							
Male	1.70	75.0	25.9	46.9	34.4	18.7	643
Female	1.61	66.3	25.6	52.4	31.1	16.5	1,239
Wealth quintile							
1st	1.65	65.4	24.2	59.4	32.8	7.8	385
2nd	1.65	69.2	25.8	53.5	30.3	16.3	415
3rd	1.65	70.7	25.8	52.4	26.3	21.3	342
4th	1.65	70.3	26.1	47.3	26.7	26.0	367
5th	1.65	72.7	26.5	40.4	45.4	14.2	373
Total	1.65	69.9	25.7	50.1	32.5	17.4	1,882

Table 3.5.3.1: Weight and Height
35 percent of the sample does not know their height and 22 percent does not know their weight. In total, BMI could not be calculated for 36 percent of the sample because of missing information.

The following table shows the self-reported smoking and tobacco use. 79 percent of the sample report to have never been smoking while an additional 16 percent refused to answer the question. Only 3 percent report to be currently smoking. 11 percent report to be chewing tobacco every day. This is the case for 25 percent of the men and less than one percent of the women.

Table 3.5.3.2: Smoking and tobacco use	Smoking				Chewing Tobacco			Sample Size
	Currently smoke	Used to smoke	Never smoked	Refusal	Every day	Occasionally	Not at all	
Region								
Sughd	4.6	3.3	77.0	15.1	11.4	2.0	86.6	605
Khatlon	1.6	1.4	81.2	15.8	9.9	4.2	85.9	1,277
Age								
40-59	3.1	1.8	80.7	14.3	11.1	3.6	85.3	1,388
60+	2.3	3.4	75.0	19.3	8.9	2.1	89.0	494

Gender								
Male	7.4	5.5	76.4	10.7	25.4	6.4	68.2	643
Female	0.0	0.0	81.3	18.7	0.8	1.1	98.1	1,239
Wealth quintile								
1st	3.1	1.1	82.9	12.9	10.0	3.2	86.8	385
2nd	1.5	2.6	77.2	18.8	10.4	4.9	84.8	415
3rd	3.8	2.2	80.7	13.2	15.4	2.9	81.7	342
4th	5.0	1.9	80.3	12.8	10.8	2.2	87.1	367
5th	1.4	3.2	76.0	19.5	6.5	2.9	90.5	373
Total	2.9	2.2	79.4	15.5	10.6	3.2	86.2	1,882

Table 3.5.3.2: Smoking and Tobacco Use

The following figure shows the self-reported alcohol consumption in the past 12 months. Very few report to have any alcoholic beverage in the past 12 months. However, for males in Sughd is it observe that a little more than one-in-four had alcoholic beverage in the past 12 months.

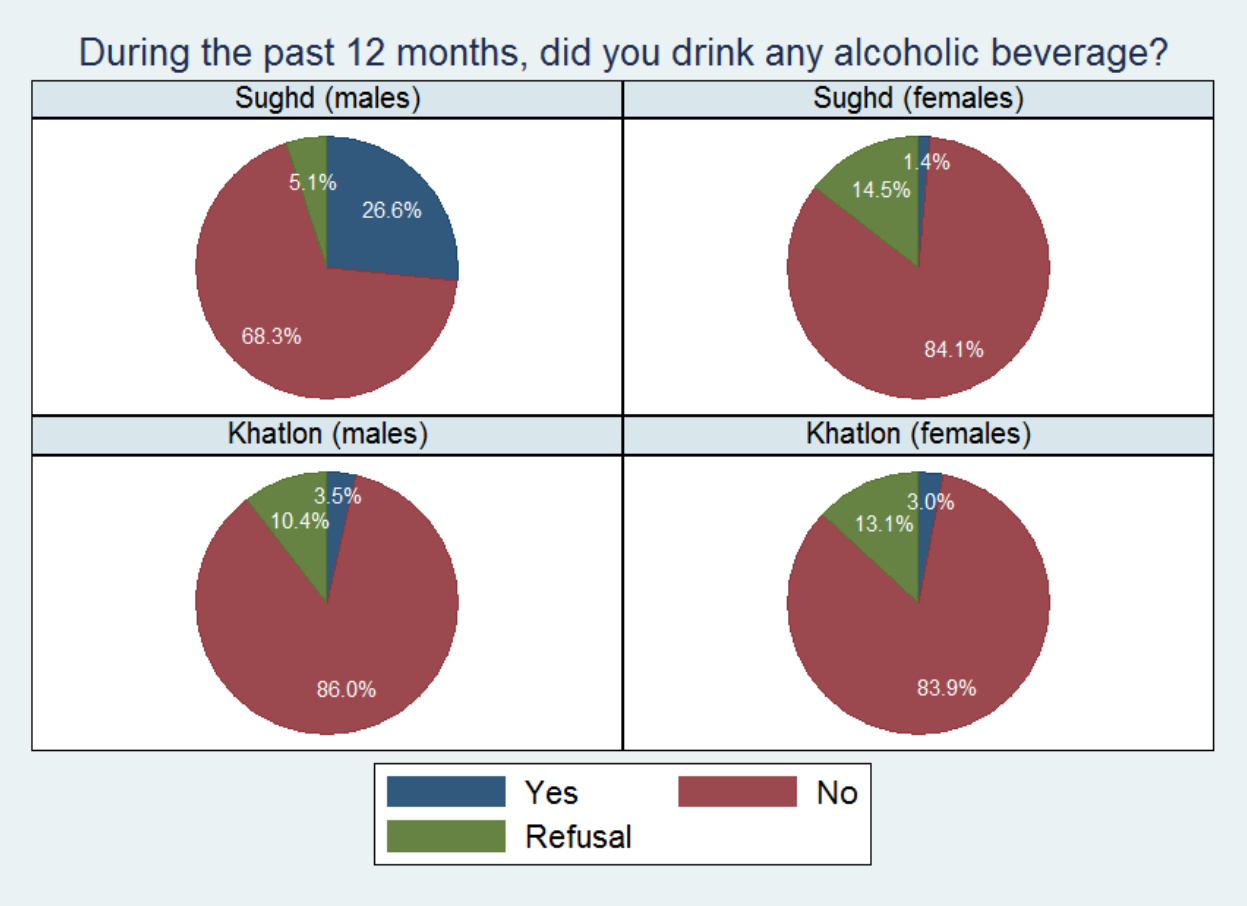


Figure 3-23: During the past 12 months, did you drink any alcoholic beverage?

3.6 External Validity

The goal of this baseline survey is to provide a valid assessment of the impact of the intervention on its target population, not to provide a basis for country statistics calculations or comparisons. While balance at baseline is important for drawing causal effects of the interventions, the IE does not aim to measure these causal effects on the population level.

It is however informative to explore to what extent the IE sample is similar to the general population in Tajikistan. To this end, the baseline sample is compared to the 2012 Demographic and Health Survey in Tajikistan (TjDHS). The TjDHS sample is a sub-nationally (oblast and urban/rural areas) representative sample of women aged 15-49. In the following tables, the IE sample is compared against the national level as well as rural areas in Sughd and Khatlon.

The households in the IE sample tend to be larger on average compared to those in the TjDHS, also when the sample is compared only to those in rural areas in Sughd and Khatlon. This is likely explained by the selection criteria of the two IE samples. However, the number of children less than five in the household is comparable to the national level.

The head of the household is more often a male and on average older in the IE sample compared to the national level. The households in the IE sample are less likely to have access to improved source of water and the level of improved sanitation is much lower in the IE sample. This is likely to be due to different classification (or understanding of the classification) of categories in the two surveys.

Table 3.6.1: External Validity (Household Sample)	National level		Rural areas in Sughd and Khatlon		Rural areas in Sughd		Rural areas in Khatlon	
	DHS	IE	DHS	IE	DHS	IE	DHS
Size of household	6.3	7.8	6.8	7.2	6.2	8.3	7.5
Number of children less than 5	1.0	1.2	1.1	1.0	0.9	1.3	1.3
Age (head of household)	50.5	54.9	51.5	57.1	52.4	53.3	50.7
Male (head of household)	78.6	83.3	82.2	82.7	79.5	83.6	84.7
Access to improved source of water (percent)	78.1	63.8	70.5	78.5	85.3	53.4	56.4
Access to improved sanitation (percent)	93.4	19.2	96.3	25.2	97.5	14.9	95.1
Sample Size	6,432	5,032	1,913	1,497	1,011	3,535	902

Table 3.6.1: External Validity (Household Sample)

The following table presents characteristics of women who have given birth in the two years preceding the respective survey and were not pregnant during the survey. The background characteristics of the women in the IE sample are similar to the national level. However, they tend to have given birth to fewer

children. For the maternal health indicators, all the ANC indicators as well as the level of deliveries in a formal health facility are better in the IE sample compared to the TjDHS. It is important to keep in mind that the IE sample is from 2015 while the DHS survey is from 2012. It is, however, also noted that the PNC indicator is worse in the IE sample compared to the TjDHS.

Table 3.6.2: External Validity (Maternal Health Sample)	National level	Rural areas in Sughd and Khatlon		Rural areas in Sughd		Rural areas in Khatlon	
	DHS	IE	DHS	IE	DHS	IE	DHS
Age	26.7	26.6	26.8	26.1	26.1	26.6	27.3
Marital status (married)	97.1	96.8	98.2	96.2	98.6	97.1	97.9
Education level (less than completed secondary)	52.1	52.6	50.9	43.6	41.5	57.1	57.1
Number of children ever born	2.6	2.4	2.7	2.2	2.3	2.5	3.0
Any skilled ANC visit	80.1	91.1	79.8	97.6	95.0	87.9	69.9
Number of ANC visits (conditional)	4.6	4.8	4.3	6.3	5.5	4.0	3.2
ANC visit at RHC (conditional)	29.7	61.0	42.5	75.2	51.4	53.2	34.8
Iron supplementation (conditional)	41.1	52.8	45.0	54.0	41.1	52.2	48.3
Delivery at formal health facility	78.2	88.2	76.5	94.8	90.7	84.9	67.1
PNC <=3d	84.3	62.9	84.7	76.4	93.4	56.2	79.0
Initiation of breastfeeding within first hour (conditional)	51.3	41.3	52.5	59.5	73.8	32.4	38.6
Sample Size	1,691	2,310	642	609	281	1,701	361

Table 3.6.2: External Validity (Maternal Health Sample)

The following table presents characteristics of all children less than 5 in the households. The children in the IE sample tend to be worse off in terms of the three anthropometric indicators as well as for receiving iron, vitamin A, and deworming medication.

Table 3.6.3: External Validity (Child Sample)	National level	Rural areas in Sughd and Khatlon		Rural areas in Sughd		Rural areas in Khatlon	
Age (month)	28.3	27.5	28.1	28.0	28.8	27.5	27.6
Gender (male)	50.9	50.9	50.1	51.4	49.0	50.6	50.9
Underweight	12.2	17.3	12.4	15.9	10.2	18.1	13.8

	Wasted	10.0	13.0	10.0	10.6	8.3	14.7	11.2
	Stunted	26.2	30.1	28.3	29.0	28.2	30.8	28.3
	Iron in past 7 days	21.8	6.0	21.8	7.2	23.5	3.9	20.7
	Vitamin A in past 6m	64.5	57.4	65.1	58.7	71.2	56.8	61.2
	Deworming in past 6m	52.7	10.3	49.2	10.1	59.4	10.5	42.1
Sample Size		5,013	8,444	2,407	2,416	1,005	6,028	1,402

Table 3.6.3: External Validity (Child Sample)

4. Health Facility Survey

This chapter presents the baseline survey results for data collected at the health facilities. Through a facility assessment, data was collected on indicators of structural quality and facility infrastructure, service utilization and availability of drugs and equipment. These aspects will be presented first. The chapter will end with a discussion of health provider knowledge assessed through vignettes.

4.1. General information

Primary health care in rural Tajikistan is provided through health houses and rural health centers. The main objective of health houses, staffed by midlevel health professionals, is to provide basic services including outreach services (home visits), basic antenatal care services, basic first aid and immunizations (TjDHS2014). Health houses are subordinate to rural health centers. The average distance to the rural health centers are reported to be 21.2km in Sughd and 14.0km in Khatlon. The rural health centers, staffed by physicians and midlevel health professionals, provide the next level of primary care, including basic diagnostics and basic treatment. Not all rural health centers have a health house in their catchment area and in general, the basic services provided at health houses are also provided at rural health centers. Rural health centers are subordinate to central rayon hospitals. The average distance to rayon hospital are reported to be 20.4km in Sughd and 16.8km in Khatlon.

In Tajikistan, outpatient care working hours for Rural Health Centers and Health Houses are from 8.00 to 17.00 on weekdays and from 8.00 to 12.00 on Saturdays. Sunday is a non-working day for outpatient services. Findings from the survey indicate that Rural Health Centers provide patient care the expected 9 hours on a weekday and almost two and a half hour more than expected on Saturdays. Health houses in Sughd are on average half an hour short on weekdays but also report to work more than the required amount of hours on Saturdays.

Table 4.1.1: General Information	Rural Health Centers			Health Houses		
	Sughd	Khatlon	All	Sughd	Khatlon	All
Year the facility was commissioned (st.dev.)	1987 (18)	1992 (16)	1990 (17)	1991 (17)	1997 (15)	1996 (16)
Last major investment in infrastructure (st.dev.)	2003 (11)	2003 (11)	2003 (11)	2004 (12)	2005 (10)	2005 (11)
Service availability						
Weekdays	9.0	9.0	9.0	8.5	9.0	8.9
Saturday	6.3	6.4	6.4	6.1	6.9	6.6
Distance to nearest higher level health facility	20.4 (17.7)	16.8 (12.3)	17.9 (14.2)	21.2 (18.5)	14.0 (13.9)	16.0 (15.6)
Sample Size	66	150	216	43	108	151

Table 4.1.1: General Information

An average catchment population for a rural health center is around 5500 people with around 1400 women in childbearing age, 500 elderly people, and 800 children less than 5 years of age. Rural Health Centers in Sughd provide services for a larger population in fewer villages compared to Khatlon. On average, each Rural Health Center has two Health Houses. In Sughd, the average is 1.4 and in Khatlon, it is 2.3. The average catchment population for Health Houses in Khatlon is around 300 more than in Sughd and around one third of the catchment population for Rural Health Centers.

Table 4.1.2: Catchment Area	Rural Health Centers			Health Houses		
	Sughd	Khatlon	All	Sughd	Khatlon	All
Average number of health houses	1.4	2.3	2.1			
Catchment - HMIS						
Total	6692	5041	5548	1768	2050	1969
Female 15-49 years	1700	1245	1389	467	508	496
Elderly (60+)	561	416	462	89	145	129
Children (<5)	1007	756	833	233	338	308
Villages						
Number	2.1	2.5	2.4	1.8	1.6	1.6
Distance (km)	5.6	4.0	4.4	6.5	4.0	4.4
Sample Size	66	150	216	43	108	151

Table 4.1.2: Catchment Area

Figure 4-1 shows that the majority of rural health centers refer patients to the rayon hospital for all selected services except for laboratory tests. 19.7 percent of rural health centers in Sughd and 39.3 percent in Khatlon refer patients for laboratory tests to another primary health care facility.

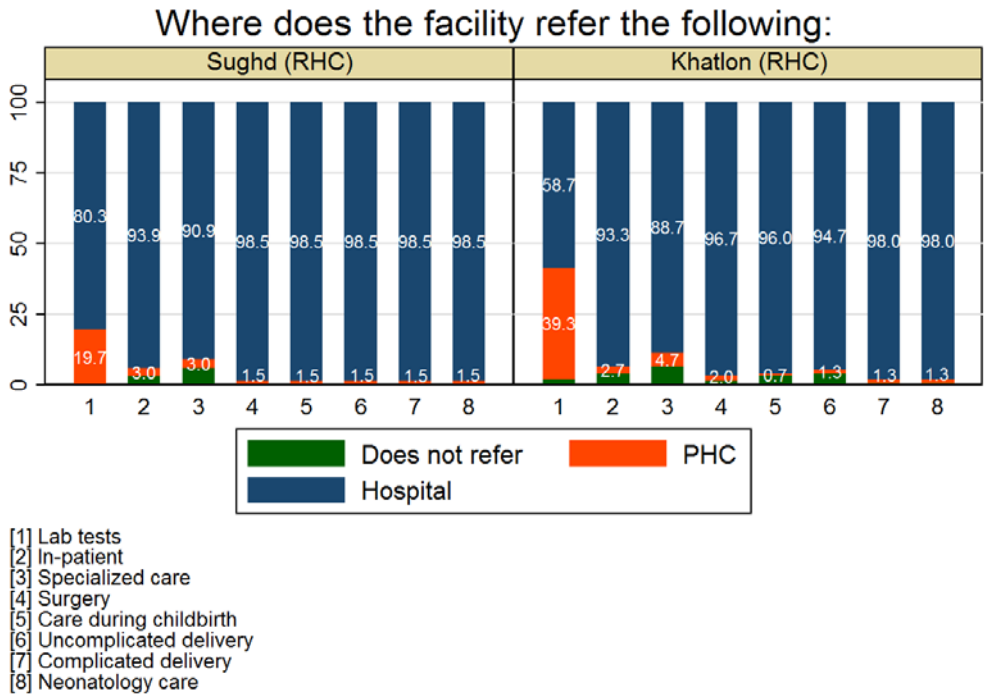


Figure 4-1: Where does the facility refer the following?

Table 4.1.3 shows that 83 percent of Rural Health Centers and 72 percent of Health Houses in Sughd have access to an improved source of water as defined by either piped into the facility or plot, a public tap, or a protected well or spring. The level is significantly lower in Khatlon with only 51 percent of Rural Health Centers and 40 percent of Health Houses with access to improved water source. Figure 4-2 shows that a protected well or spring accounts for around 25 percent of the water sources in Sughd and a little less in Khatlon. If a protected well or spring is removed from the definition of an improved water source, the level of improved water source in Sughd drops to 47 percent of health facilities and 29 percent of health facilities in Khatlon. It is especially noteworthy in figure 4-2 that a substantial share of facilities in Khatlon rely on surface water. Furthermore, a very small minority of the surveyed health facilities had water piped into the facility pointing to limitations in infrastructure.

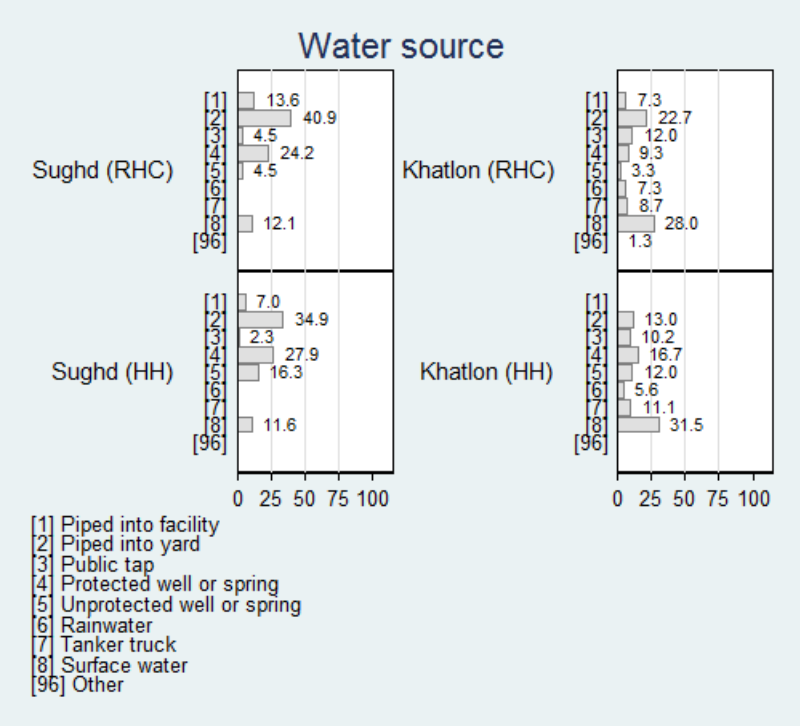


Figure 4-2: Water source

Table 4.1.3 also report that access to functioning toilet facilities is also far from universal. Only 8 percent of health houses in Khatlon have functioning toilet facilities separately for male and female. Less than half of the rural health centers have access to functioning toilet facilities.

A very low level of facilities report no electric power outage in the past 7 days, with an overall level of 11 percent for Rural Health Centers and 4 percent for Health Houses. All of the Health Houses in Sughd had an electric power outage in the past 7 days. In terms of communication options, it is usually the case that staff has a mobile. However, an official landline or mobile is rarely observed. Access to functioning transportation is also very low at rural health centers and non-existent at health houses.

Table 4.1.3: Infrastructure	Rural Health Centers			Health Houses		
	Sughd	Khatlon	All	Sughd	Khatlon	All
Access to improved source of water[1]	83.3	51.3	61.1	72.1	39.8	49.0
Any time with no available water in past 7 days	16.7	22.7	20.8	14.0	28.7	24.5
Access to functioning toilet facility	92.4	80.0	83.8	58.1	38.0	43.7
Toilet facility separated for male and female	63.6	39.3	46.8	23.3	8.3	12.6

No electric power outage in the last 7 days	9.1	12.0	11.1	0.0	5.6	4.0
Communication						
Landline	10.6	2.0	4.6	2.3	0.0	0.7
Mobile	25.8	3.3	10.2	18.6	2.8	7.3
Staff mobile	100.0	99.3	99.5	97.7	96.3	96.7
Access to a functioning computer	31.8	6.7	14.4	0.0	0.0	0.0
Access to functioning transportation	28.8	7.3	13.9	0.0	0.0	0.0
Sample Size	66	150	216	43	108	151

Table 4.1.3: Infrastructure
Improved source of water is defines as either piped into facility or plot, a public tap, or a protected well or spring.

Less than half of the facilities (40 percent) has a waiting room, 66 percent has a room with auditory and visual privacy for patient consultations, and 66 percent has heating in patient areas during winter. Figure 4-3 shows the percentages for Rural Health Centers and Health Houses in Sughd and Khatlon, respectively.

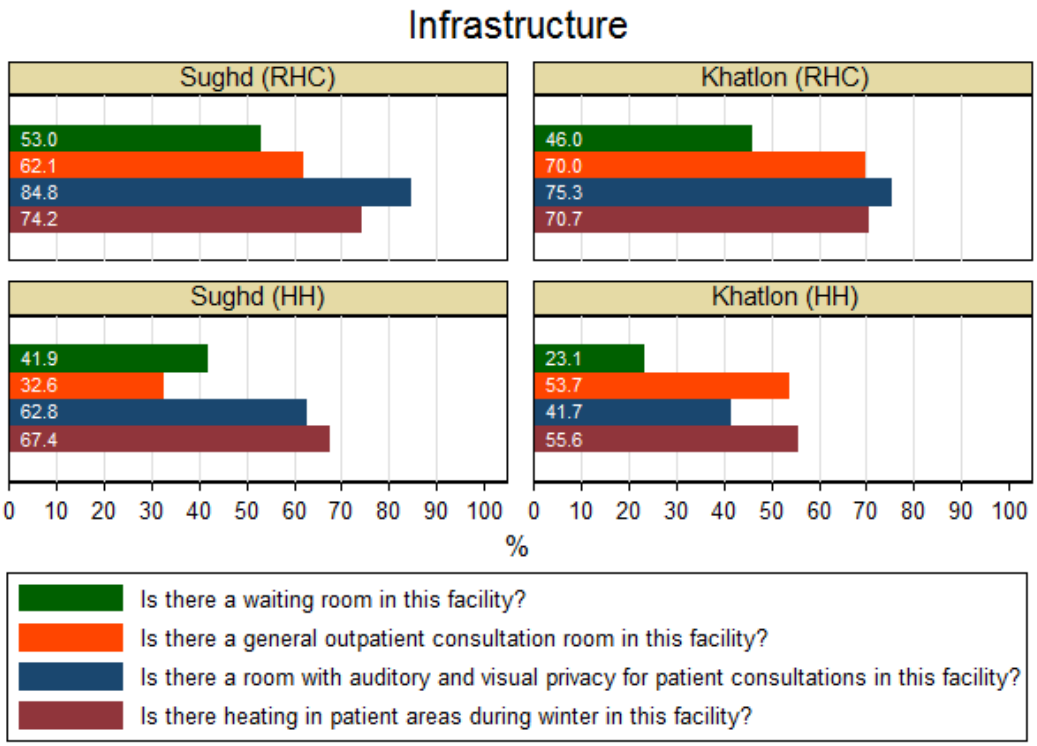


Figure 4-3: Infrastructure

4.2. Offered Services

Figure 4-4: Offered Services

** Offered services for family planning and diabetes is not asked in general terms in the questionnaire. The level for family planning is estimated based on answer to services offered for a) contraceptive pill, b) injections, c) implant insertion, d) male condoms, e) IUD, and f) female or male sterilization. The level for diabetes is estimated based on answer to services offered for a) obesity prevention, b) health nutrition, c) dispensary observations, d) free distribution of diabetic drugs, e) diabetes patient card, or f) glucometry.*

Overall, the facilities are likely to offer all main MCH and NCD services. For Health Houses, however, there is some room for improvement in the services offered, in particular for family planning and the two NCD services, hypertension and diabetes.

In conformity with national protocols in Tajikistan, RHCs are expected to provide laboratory services. However, only 47 percent of RHCs in Sughd and less than 9 percent in Khatlon report offering any laboratory services. National protocols do not require that HHs provide any laboratory services.

Outreach activities (shown in figure 4-5) are more frequent in Sughd region compared to Khatlon, and for rural health centers compared to health houses. 92 percent of facilities surveyed have an outreach work plan for vaccination. The level is 96 percent for RHCs and 85 percent for HHs.

The vaccination outreach is very low with the modal observation of 0 days in past 30 days reported by 89 percent of the facilities. However, the following section shows that 92 percent of the facilities have a vaccination outreach work plan for the current year. The modal observation for ANC, PNC, nutrition and hypertension is 72 days of outreach in the past 6

months. This indicates that the common outreach activity is around 3 days a week for these services.

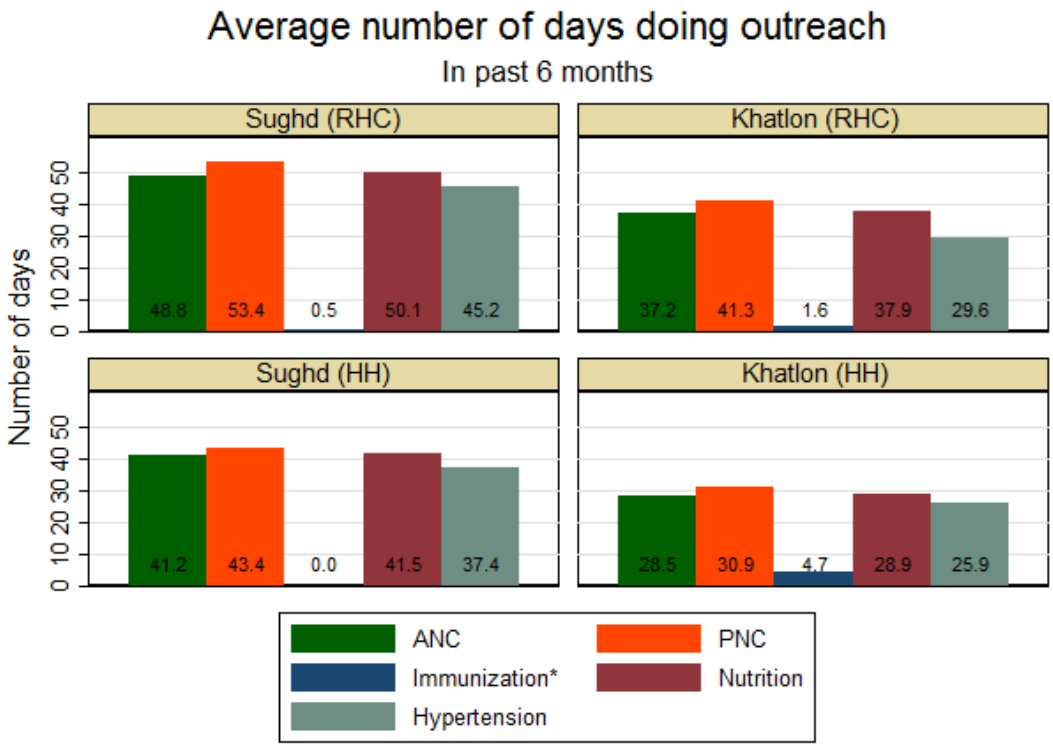


Figure 4-5: Average number of days doing outreach
**) Number of days for immunization is estimated based on number of days in past 30 days.*

We now turn to tables that in more details describes what is included in the different services provided. These tables are divided by type of service: Child health, family planning, maternal health, NCDs, and laboratory services. First, we have a general note on data collected for the services offered.

Data on services are collected in two separate main sections in the facility assessment. Most of the information in the following tables are oral reports from the head of facility (or most informed staff member) in combination with utilization coverage from the HMIS system. I.e. the interviewer asked the head of facility if the service is offered (in-facility or as outreach) and then verified the number of patients per service from the HMIS. This section provide information on a detailed level. For example, for family planning it is asked if the facility offers contraceptive pill, injections, implant insertion, etc.

In addition, we have oral reports from the facility head independent of the HMIS system. This section asks questions in general terms; for example, “does this facility provide immunization services?” In the following, whenever data is from the general section it will be marked with an asterisk (*). If inconsistencies are observed in the data, this will be mentioned in the text.

4.2.1. Child Health

All rural health centers in Sughd have in-facility curative care for children less than 5 years as well as growth monitoring and nutrition advice. The level for rural health centers in Khatlon is a little less at around 95 percent. The level for outreach availability for curative care is overall 86 percent and 81 percent for growth monitoring and nutritional advice. In terms of number of days the service is provided, the common observation for rural health centers is 6 days a week. However, this does not apply to all rural health centers and the average remains at around 5-and-a-half days per week. In general, rural health centers are more likely to report offering both curative and growth monitoring/ nutritional services than health houses.

Table 4.2.1: Does this facility provide the following services?	Rural Health Centers			Health Houses		
	Sughd	Khatlon	All	Sughd	Khatlon	All
Curative Care						
In-facility availability	100.0	94.7	96.3	55.8	37.0	42.4
Outreach availability	86.4	86.0	86.1	51.2	31.5	37.1
Service availability	100.0	94.7	96.3	55.8	37.0	42.4
Days per week (conditional)	5.5	5.6	5.6	5.6	4.3	4.7
Growth monitoring & nutritional advice						
In-facility availability	100.0	94.7	96.3	51.2	40.7	43.7
Outreach availability	90.9	76.0	80.6	51.2	38.9	42.4
Service availability	100.0	94.7	96.3	51.2	41.7	44.4
Days per week (conditional)	5.3	5.5	5.4	5.4	4.5	4.8
Immunization (In-facility / Outreach)						
BCG	13.6 /0.0	36.7 /8.7	29.6 /6.0	2.3 /0.0	25.0 /7.4	18.5 /5.3
Pentavalent Dose 1	15.2 /0.0	34.7 /11.3	28.7 /7.9	4.7 /0.0	28.7 /11.1	21.9 /7.9
Pentavalent Dose 2	16.7 /0.0	36.7 /13.3	30.6 /9.3	11.6 /0.0	27.8 /16.7	23.2 /11.9
Pentavalent Dose 3	98.5 /1.5	99.3 /26.7	99.1 /19.0	97.7 /2.3	99.1 /35.2	98.7 /25.8
Polio Dose 1	97.0 /3.0	99.3 /28.0	98.6 /20.4	97.7 /0.0	97.2 /37.0	97.4 /26.5
Polio Dose 2	100.0 /0.0	98.7 /28.0	99.1 /19.4	97.7 /2.3	99.1 /36.1	98.7 /26.5
Polio Dose 3	100.0 /1.5	98.7 /28.0	99.1 /19.9	95.3 /2.3	100.0 /35.2	98.7 /25.8
Measles Dose 1	100.0 /0.0	99.3 /24.7	99.5 /17.1	95.3 /2.3	98.1 /36.1	97.4 /26.5
In-facility availability	100.0	99.3	99.5	97.7	100.0	99.3

	Outreach availability	6.1	37.3	27.8	4.7	50.9	37.7
	Service availability	100.0	100.0	100.0	97.7	100.0	99.3
	Days per week (conditional)	6.0	6.0	6.0	6.0	6.0	6.0
	In a separate room*	92.4	84.0	86.6	57.1	45.4	48.7
	Outreach work plan*	98.5	94.7	95.8	85.7	85.2	85.3
Sample Size		66	150	216	43	108	151

Table 4.2.1: Does this facility provide the following services? (Child Health)

For immunization services, almost all rural health centers and health houses report offering immunizations in facility. However, rural health centers rarely offer immunization services on an outreach basis although the outreach activity is relatively much higher in Khatlon compared to Sughd. The highest vaccination outreach activity is observed for health houses in Khatlon with half of the health houses doing outreach. It is noted, that the HMIS section indicate a higher outreach level than when asked about number of days doing outreach in past 30 days as reported in figure 4-5. Only 25 percent of the health houses in Khatlon reported any days of outreach in past 30 days although 51 percent report to have outreach services. The service availability varies over different type of vaccines. Table 4.2.1 shows how all rural health centers report to provide the measles vaccine. Almost all rural health centers report to provide Polio I, II, III and Pentavalent III. However, only around 15 percent of rural health centers in Sughd report providing BCG and Pentavalent I and II. In Khatlon, the level is around 37 percent. For health houses, the same pattern is observed with Pentavalent III the most commonly offered vaccine. The BCG vaccine is supposed to be given at birth and is therefore not provided in rural health centers. However, Pentavalent I and II are supposed to be given together with polio I and II. The immunization availability is estimated by facilities that provide either one of the vaccination. The level is fully consistent with the level reported in Figure 5.4. In facilities where immunization services are provided, this is provided 6 days a week. 87 percent of rural health centers have immunizations services in a separate room and 96 percent have an outreach work plan. Less than half of the health houses have immunization services in a separate room and 85 percent have an outreach work plan.

Figure 4-6 below indicates that counseling on breastfeeding services are in general widely available.

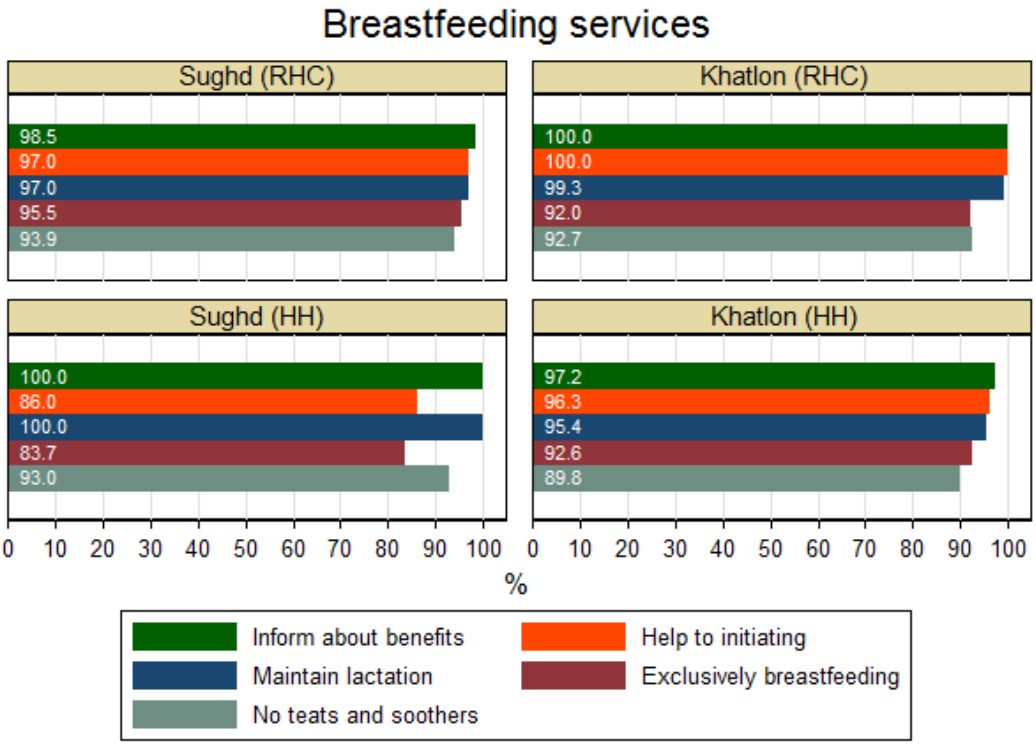


Figure 4-6: Breastfeeding Services

4.2.2 Family Planning

97 percent of the surveyed rural health centers and 75 percent of health houses report providing family planning services in the facility. 66 percent of rural health centers and 50 percent of health houses reported delivering family planning services through outreach. Given that family planning services are provided, these services are always offered 6 days a week. Service availability varies across different family planning services with contraceptive pill, injections, and male condoms widely offered and sterilization offered very rarely. IUDs are offered in half of the rural health centers.

Table 4.2.2: Does this facility provide the following services?	Rural Health Centers			Health Houses		
	Sughd	Khatlon	All	Sughd	Khatlon	All
Contraceptives (In-facility / outreach)						
Contraceptive pill	98.5 /48.5	90.0 /58.7	92.6 /55.6	65.1 /27.9	65.7 /44.4	65.6 /39.7
Injection	90.9 /6.1	88.0 /52.0	88.9 /38.0	55.8 /4.7	61.1 /39.8	59.6 /29.8
Implant insertion	13.6 /0.0	2.7 /2.0	6.0 /1.4	2.3 /0.0	0.9 /0.0	1.3 /0.0
Male condoms	93.9 /36.4	80.7 /47.3	84.7 /44.0	67.4 /25.6	57.4 /37.0	60.3 /33.8
IUD	80.3	38.0	50.9	9.3	1.9	4.0
Female sterilization	1.5	0.7	0.9	0.0	0.0	0.0
Male sterilization	0.0	0.0	0.0	0.0	0.0	0.0
In-facility availability	100.0	95.3	96.8	69.8	76.9	74.8
Outreach availability	54.5	70.7	65.7	34.9	56.5	50.3
Service availability	100.0	95.3	96.8	69.8	76.9	74.8
Days per week (conditional)	6.0	6.0	6.0	6.0	6.0	6.0
Sample Size	66	150	216	43	108	151

Table 4.2.2: Does this facility provide the following services? (Family planning)

4.2.3 Maternal Health

Almost all rural health centers in Sughd and Khatlon report offering antenatal care services. While virtually all the surveyed health houses in Sughd reported offering antenatal care, nearly 13 percent of health houses in Khatlon reported not doing so. When asked specifically about the availability of Tetanus Toxoid almost all rural health centers and health houses reported offering Tetanus Toxoid as an in-facility service, but relatively few reported provision through outreach. Given that the service is provided, it is provided 6 days a week.

PNC services are also widely offered. The PNC services are not asked in the survey as part of the HMIS section and the level reported in table 4.2.3 therefore refer to the general level also reported in figure 4-4.

Table 4.2.3: Does this facility provide the following services?	Rural Health Centers			Health Houses		
	Sughd	Khatlon	All	Sughd	Khatlon	All
Antenatal Care						
In-facility availability	100.0	96.0	97.2	97.7	87.0	90.1
Outreach availability	95.5	94.0	94.4	97.7	89.8	92.1
Service availability	100.0	97.3	98.1	100.0	94.4	96.0
Days per week (conditional)	6.0	6.0	6.0	6.0	6.0	6.0
Maternal health card*	98.5	97.9	98.1	92.9	95.8	94.9
Tetanus Toxoid						
In-facility	100.0	98.7	99.1	93.0	98.1	96.7
Outreach	0.0	24.7	17.1	2.3	35.2	25.8
Service availability	100.0	99.3	99.5	93.0	99.1	97.4
Days per week (conditional)	6.0	6.0	6.0	6.0	6.0	6.0
Postnatal Care*	100.0	99.3	99.5	100.0	95.4	96.7
Sample Size	66	150	216	43	108	151

Table 4.2.3: Does this facility provide the following services? (Maternal Health)

Figure 4-7 shows that in the last 6 months, iron and folate were prescribed all the time at ANC visits in 82 percent of rural health centers and 86 percent of health houses in Sughd. The corresponding level is 48 percent for rural health centers in Khatlon and 39 percent for health houses. This points to concerns around quality of antenatal care services in Khatlon rural health centers and health houses.

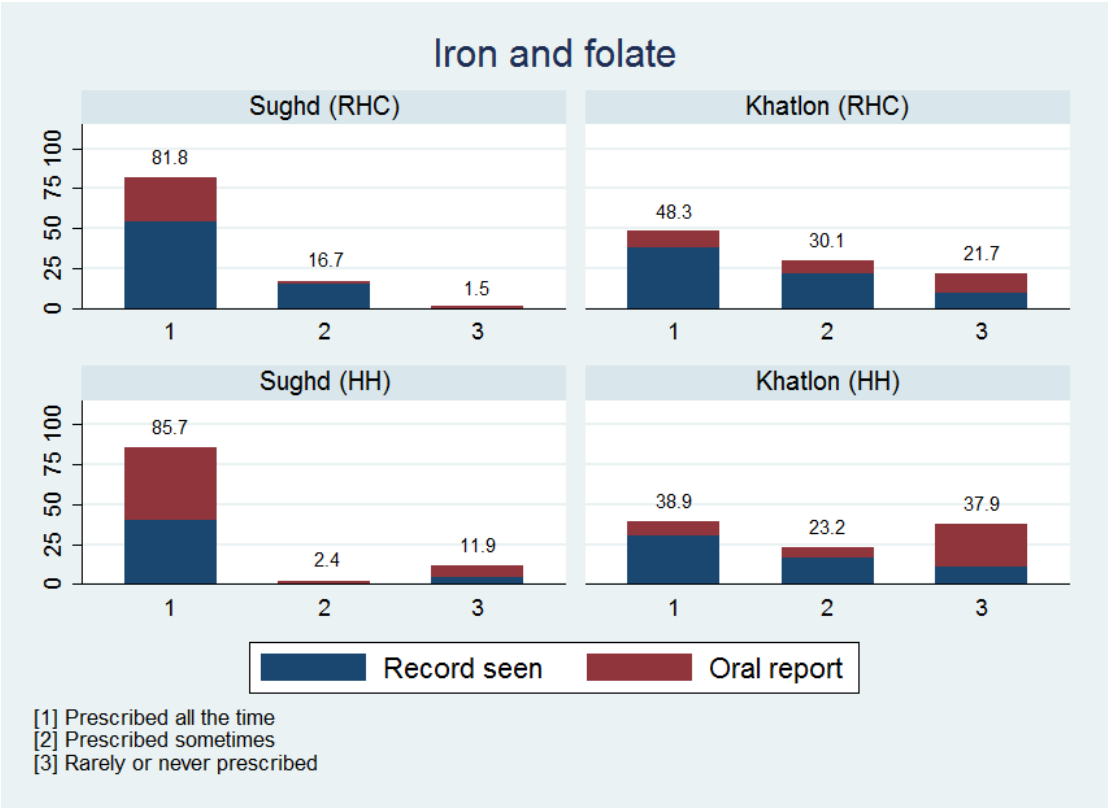


Figure 4-7: Iron and folate

4.2.4 NCD services

The service availability for hypertension is shown by the height of the bar in figure 4-8. All rural health centers in Sughd provide hypertension services, whereas the level is 91.3 percent in Khatlon. For health houses, the level is 95.3 percent in Sughd and 79.6 percent in Khatlon. For health facilities that provide hypertension services, these services include diagnosis of hypertension, and counseling on nutrition. Less often is treatment of hypertension offered and very few facilities offer population-based screening for hypertension.

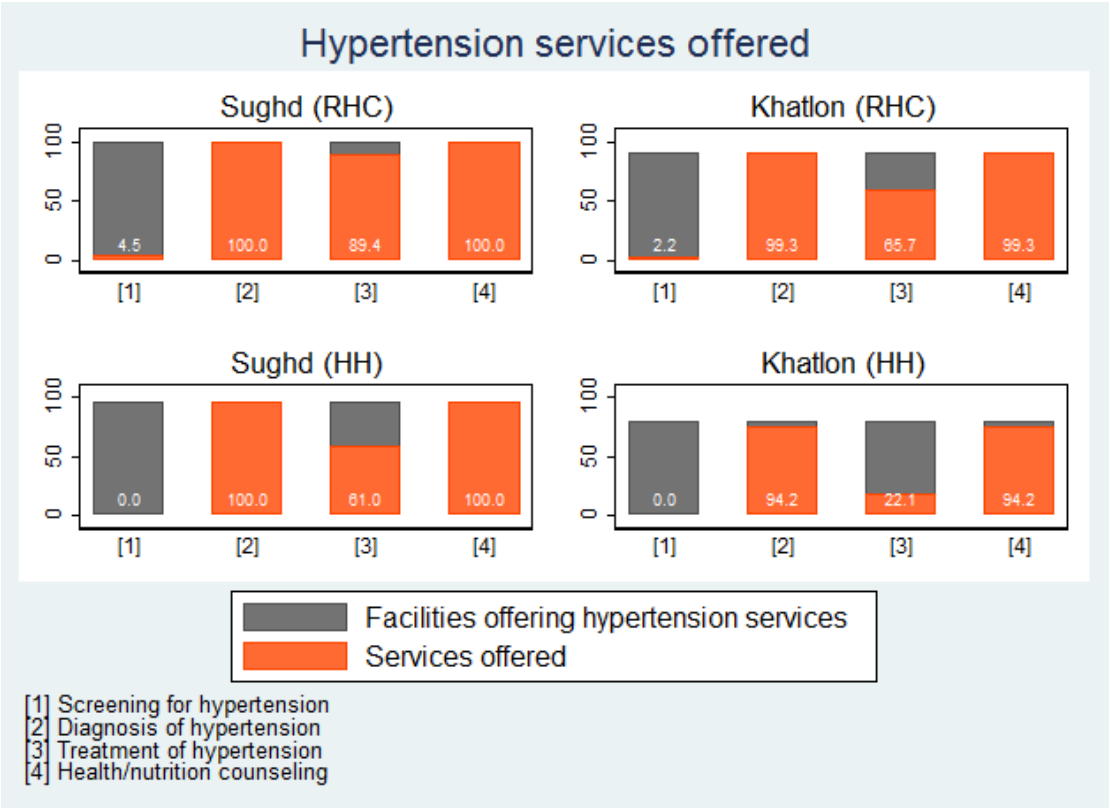


Figure 4-8: Hypertension Services Offered

4.3 Administration, management and supervision

86 percent of rural health centers and 81 percent of health houses have a facility work plan for the current year. For these facilities, it is asked if priority health-related activities are identified and if these include some selected services. Overall, all the main MCH and NCD services covered by the PBF program are a priority. The only exception is PNC that is only identified as a priority in 43 percent of rural health centers with a work plan and in 36 percent of health houses with a work plan.

The average number of facility staff meetings in past 3 months is around 11 for rural health centers and 9 for health houses. A majority of health facilities (53 percent) reported 12 facility staff meetings in past 3 months or 1 staff meeting every week. Less than 60 percent of rural health centers and 40 percent of health houses have written job descriptions for all of their staff members.

Table 4.3.1: Administration, Management, and Supervision	Rural Health Centers			Health Houses		
	Sughd	Khatlon	All	Sughd	Khatlon	All
Facility work plan (verified)	93.9 (65.2)	82.7 (70.7)	86.1 (69.0)	88.4 (46.5)	77.8 (60.2)	80.8 (56.3)
Priority health-related activities (conditional)						
Family planning	95.2	87.9	90.3	97.4	75.0	82.0
Prenatal care	95.2	89.5	91.4	100.0	83.3	88.5
Postnatal care	30.6	49.2	43.0	18.4	44.0	36.1
Immunization	95.2	88.7	90.9	100.0	81.0	86.9
Nutrition	95.2	88.7	90.9	94.7	76.2	82.0
IMCI	95.2	84.7	88.2	100.0	81.0	86.9
Hypertension	95.2	87.9	90.3	100.0	79.8	86.1
Diabetes	93.5	80.6	84.9	97.4	71.4	79.5
Number of facility staff meetings in past 3 months	11.8	10.1	10.6	10.7	8.6	9.2
All staff has written job descriptions	74.2	52.7	59.3	46.5	37.0	39.7
Supervisions in past 3 months	87.9	95.3	93.1	58.1	83.3	76.2
Rayon health center management	83.3	94.0	90.7	46.5	82.4	72.2
Rayon hospital representative	36.4	51.3	46.8	14.0	41.7	33.8
Oblast health department / MOH	28.8	40.7	37.0	23.3	20.4	21.2
Performance of facility assessed externally (in past year)	100.0	100.0	100.0	90.7	85.0	86.7
Staff performance assessment (in past year)	100.0	86.0	90.3	86.0	77.8	80.1
Internally	98.5	77.9	84.2	74.4	63.1	66.2
Externally	90.9	74.0	79.2	67.4	70.8	69.8
Sample Size	66	150	216	43	108	151

Table 4.3.1: Administration, Management, and Supervision

93 percent of rural health centers and 76 percent of health houses reported at least one visit for supervision or technical support from an external supervisor. The average number of visits is 5.7 in past 3 months for rural health centers and 4.5 for health houses (data not shown) for facilities that reported receiving any external supervision visits. The performance of all rural health centers has been assessed externally in the past year with a mean of 5.2 visits for rural health centers that received any visits. The corresponding figures for health houses are 87 and 3.1. Staff performance has been assessed either internally or externally in around 90 percent of the rural health centers and 80 percent of health houses with 14.8 supervision visits on average for rural health centers and 10.0 visits for health houses.

4.4 Patient safety

Figure 4-9 indicates with the height of the bar the level of facilities having a consultation room. The level as reported in section 4.1 is 62.1 percent for rural health centers in Sughd, 70.0 percent for rural health centers in Khatlon, 32.6 percent for health houses in Sughd and 53.7 percent for health houses in Khatlon. Figure 4-9 shows the percentage of facilities with a general outpatient consultation room that have: [1] a safety box or closed container for disposal of used sharps, [2] posted procedures for decontamination, and [3] a basin with a water source and soap. For example, among the rural health centers in Sughd with a consultation room, around a third have no safety box or closed container, around a third have a safety box or closed container in some of the consultations rooms, and around one third have it in all consultation rooms. 17 percent do not have posted procedures for decontamination procedure steps whereas the remaining either have it in some of the consultation rooms or in all. All of the rural health centers in Sughd with a consultation room report to have a water source and soap at least in some of the consultation rooms. In Khatlon, a higher rate of the rural health centers report to have a consultation room. However, 21 percent of these facilities do not have a water source or soap in any of the consultation rooms. The availability of these patient safety amenities in health houses are in general worse than the rural health centers. More than half of the consultation rooms in health houses have no safety box for disposal of used sharps.

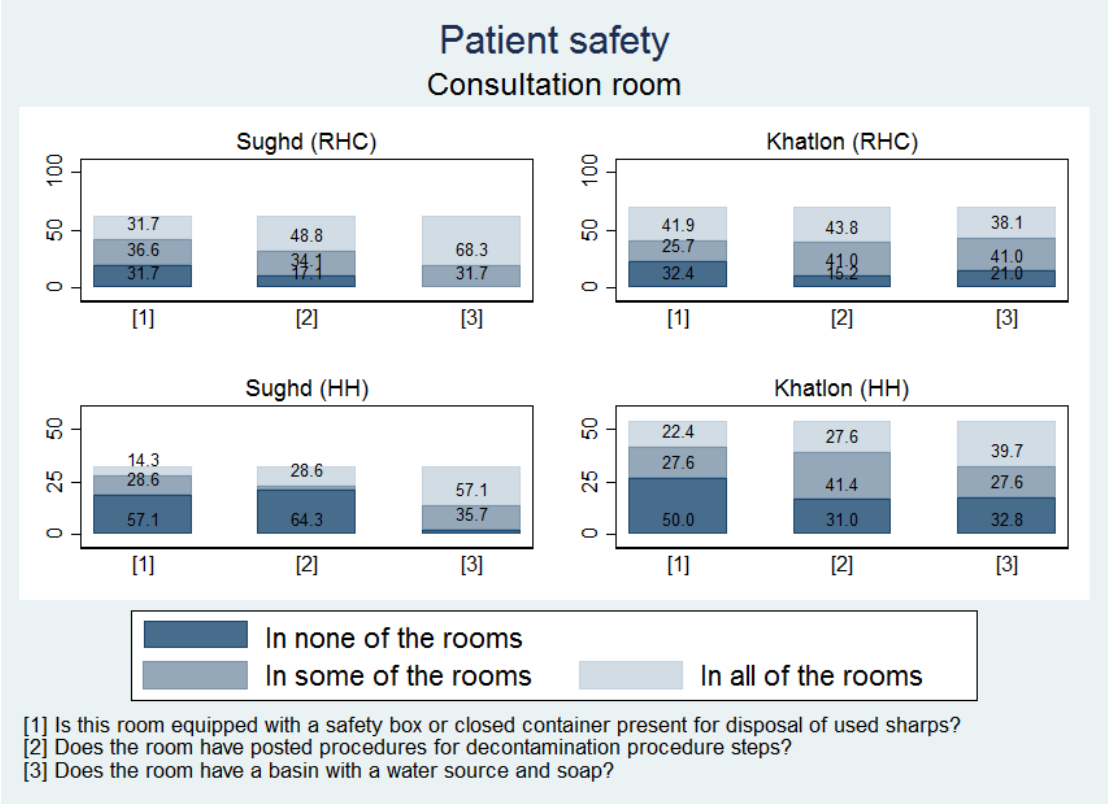


Figure 4-9: Patient Safety (Consultation Room)

Another important aspect of patient safety is disinfection and sterilization. These are essential for ensuring that equipment do not transmit infections to patients. The following figure presents the procedures reported for sterilization by the surveyed RHCs and HHs.

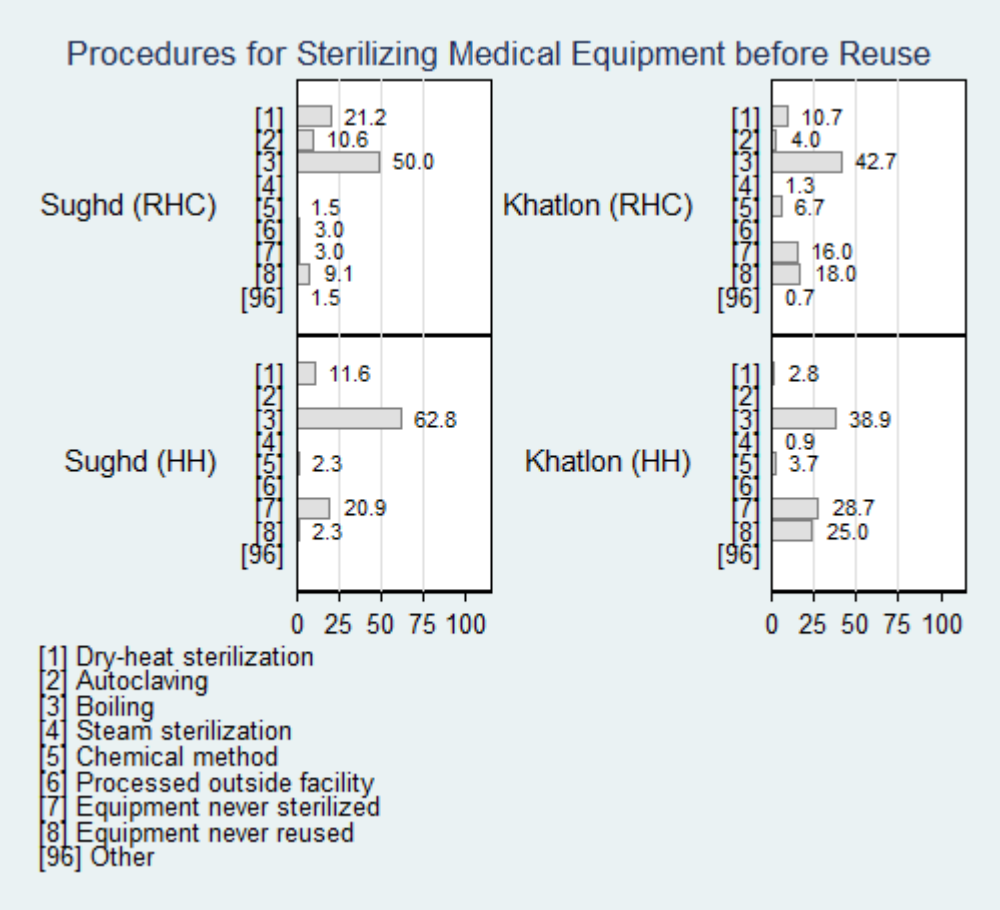


Figure 4-10: Procedure for Sterilizing Medical Equipment before Reuse

In accordance with international guidelines, boiling is not considered an appropriate method of sterilization. However, in order to comply with guidelines on sterilization the facilities need as a minimum to have the required equipment. None of the health houses in Sughd have any sterilizing equipment and very few health houses in Khatlon report having sterilization equipment (3.7 percent). The level of rural health centers with sterilization equipment is 48.5 in Sughd and 19.3 in Khatlon (data not shown).

The following table shows which disinfectants are commonly used in Tajikistan and if facilities ran out of disinfectant in past 30 days. This happened for 12 percent of rural health centers and 22 percent of health houses.

Table 4.4.1: Disinfectants	Rural Health Centers			Health Houses		
	Sughd	Khatlon	All	Sughd	Khatlon	All
What disinfectant(s) are being used in the facility						
Chlorhexidine	13.6	10.0	11.1	4.7	9.3	7.9
Bleaching powder	92.4	81.3	84.7	67.4	66.7	66.9
Chlorine solution	19.7	29.3	26.4	14.0	22.2	19.9
Other	0.0	8.0	5.6	4.7	5.6	5.3

Facility ran out of disinfectant in past 30 days	3.0	16.0	12.0	7.0	27.8	21.9
Sample Size	66	150	216	43	108	151

Table 4.4.1: Disinfectants

It is the recommendation that biomedical waste is burned, which is the most commonly observed method for the surveyed facilities. However, in Khatlon 23 percent of the RHCs and 9 percent of the health houses are disposing biomedical waste in a pit. 26 percent of health houses in Sughd and 28 percent of health houses in Khatlon do not have any provision for the disposal of bio medical waste.

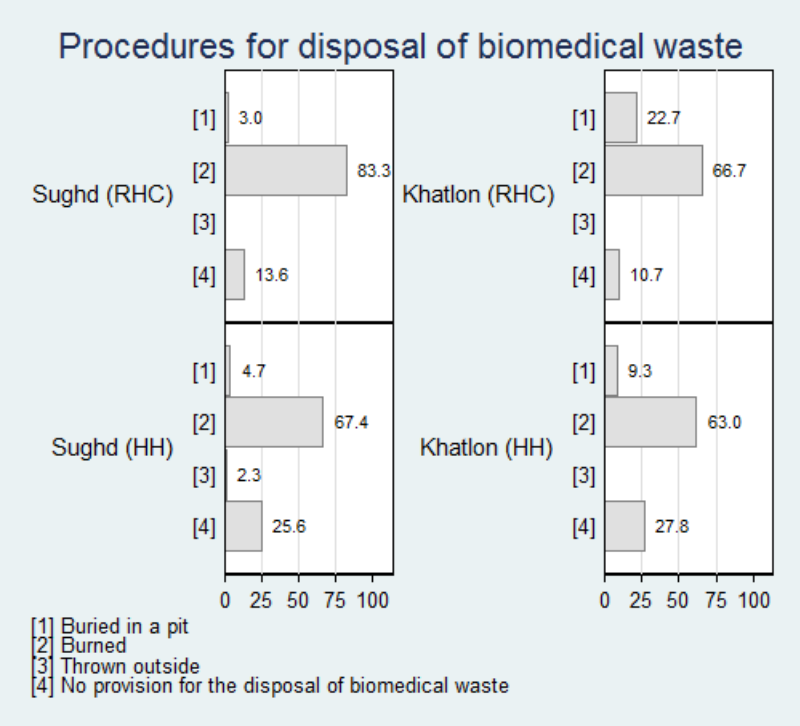


Figure 4-11: Procedures for disposal of biomedical waste

4.5 Drug storage, supplies, contraceptives and vaccines

81.8 percent of rural health centers in Sughd and 45.3 percent in Khatlon have a designated place to store drugs. Less than 12 percent of these facilities store drugs in a separate room only used for this purpose and with doors and windows that can be locked. For a large share of these facilities the area did not always look clean or have windows that can be covered to keep the sunlight out. For facilities in Khatlon drugs are kept on an elevated platform in less than 70 percent of the cases and a stock register is only maintained in less than half of the facilities with a place to store drugs. In Sughd, however, the drugs are commonly kept on an elevated platform and there is a stock register.

Table 4.5.1: Drug and Vaccine Storage	**Rural Health Centers**		
	Sughd	Khatlon	All
There is a place used to store drugs	81.8	45.3	56.5

	Separate room only used for drugs with doors and windows that can be locked	13.0	10.3	11.5
	Area looks clean and dry and windows can be covered to keep sunlight out	61.1	45.6	52.5
	Drugs kept on an elevated platform	96.3	67.6	80.3
	Stock register maintained	90.7	45.6	65.6
Actions if facility runs out of key drugs				
	Inform facility in charge	88.9	89.7	89.3
	Call district pharmacy	40.7	20.6	29.5
	Call DHMT	7.4	7.4	7.4
	Buy in local private market	18.5	14.7	16.4
	Send patient to buy in private market	40.7	36.8	38.5
	Go to Dushanbe to buy drugs	3.7	1.5	2.5
Conditional Sample Size		54	68	122

Table 4.5.1: Drug and Vaccine Storage

The availability of general drugs is quite low in both Sughd and Khatlon. Tetracycline ophthalmic ointments that are used to treat infections of the eye is available in less than 10 percent of the rural health centers and mebendazole, which is used to treat parasitic worm infections, is available in only 5.6 percent of rural health centers in Sughd and less than 2 percent of rural health centers in Khatlon. Oral Rehydration Solution packets are available in about 75 percent of the rural health centers with a place to store drugs.

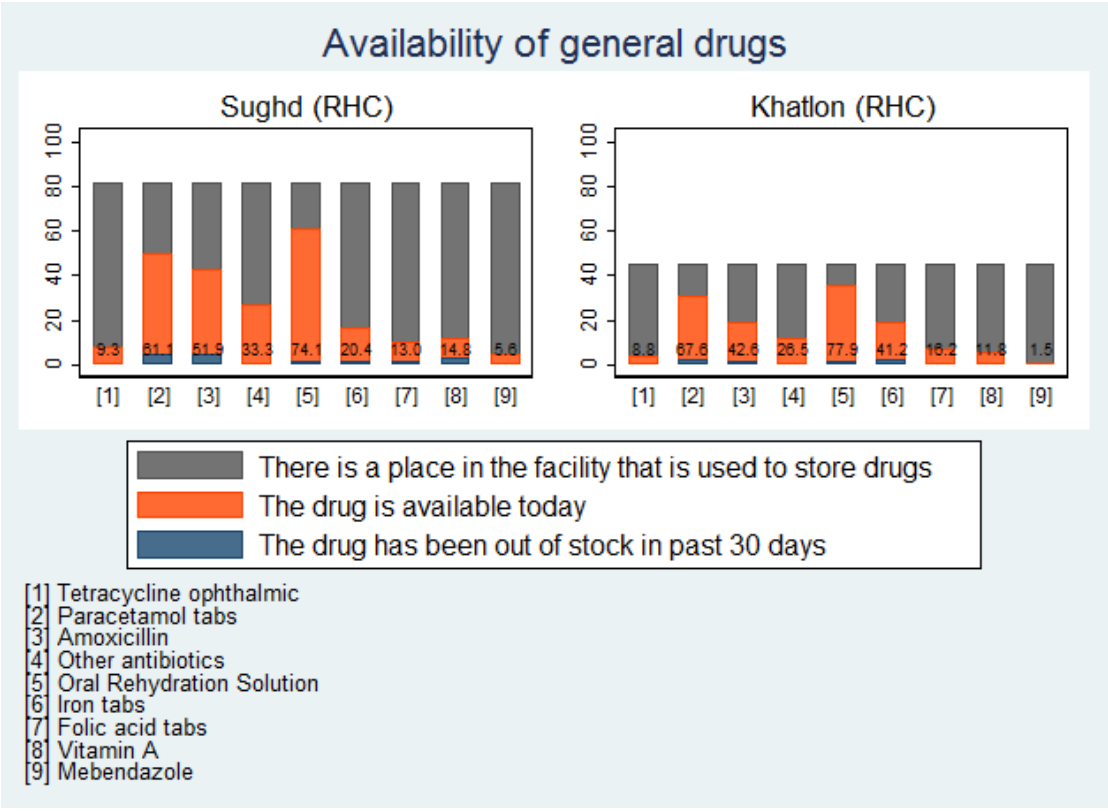


Figure 4-12: Availability of general drugs

The availability of contraceptives (figure 4-13) and vaccines (table 4.5.2) is considerably better in Sughd compared to Khatlon. The availability of diagnostic kits is very low in both regions.

Table 4.5.2: Availability of Vaccines (at the day of interview)	Rural Health Centers		
	Sughd	Khatlon	All
Bacille Calmette-Guérin (BCG)	9.3	10.3	9.8
Oral Polio Vaccine (OPV)	77.8	42.6	58.2
Dyphteria Tetanus Pertussis (DTP)	48.1	23.5	34.4
Hepatitis B Vaccine (HBV) Tetravalent	14.8	16.2	15.6
Measles vaccine	37.0	20.6	27.9
HiB vaccine	9.3	8.8	9.0
Pentavalent	64.8	32.4	46.7
Tetanus Toxoid (TT)	57.4	22.1	37.7
Availability of Diagnostic kits (at the day of interview)			
Pregnancy testing kit	20.4	20.6	20.5
Rapid plasma reagin (RPR) test	1.9	0.0	0.8
Urine protein & glucose testing kit	20.4	0.0	9.0
Conditional Sample Size	54	68	122

Table 4.5.2: Availability of Vaccines

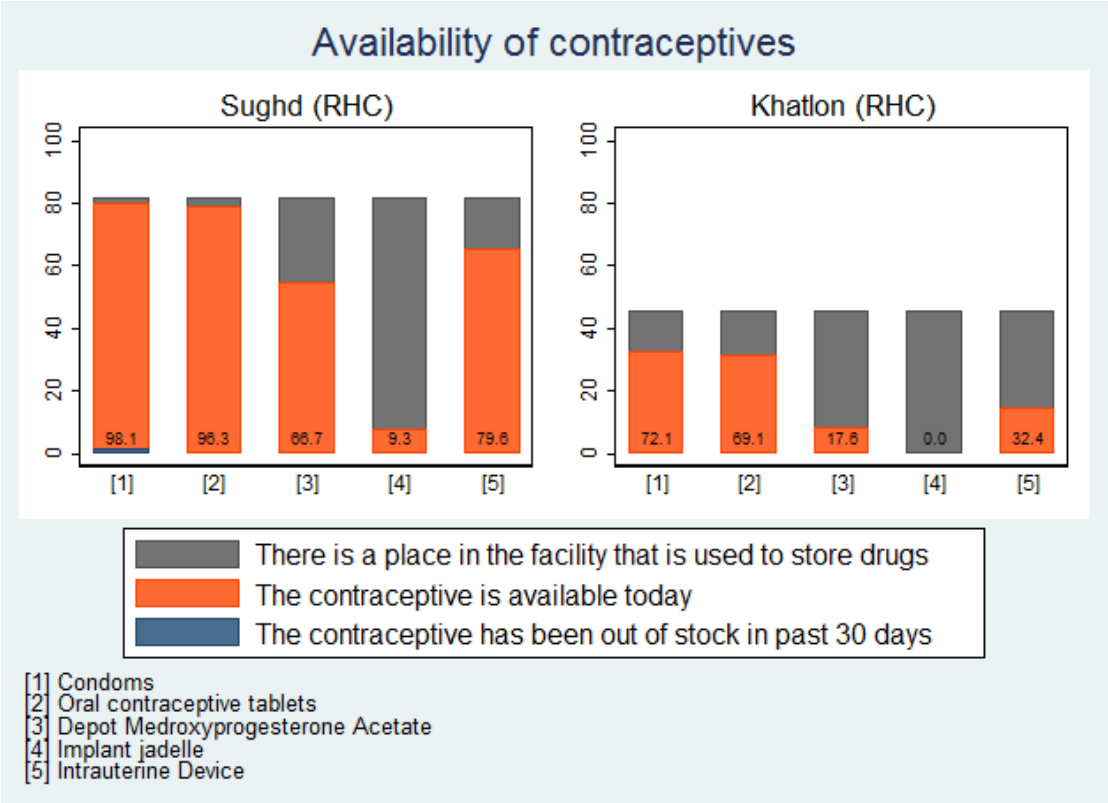


Figure 4-13: Availability of contraceptives

4.6 Equipment

The following figures show the availability of functioning equipment in surveyed facilities. In general, the availability of basic equipment, particularly basic equipment for antenatal care,

is lower in Khatlon than in Sughd. Unsurprisingly, equipment are less likely to be available in health houses than in rural health centers.

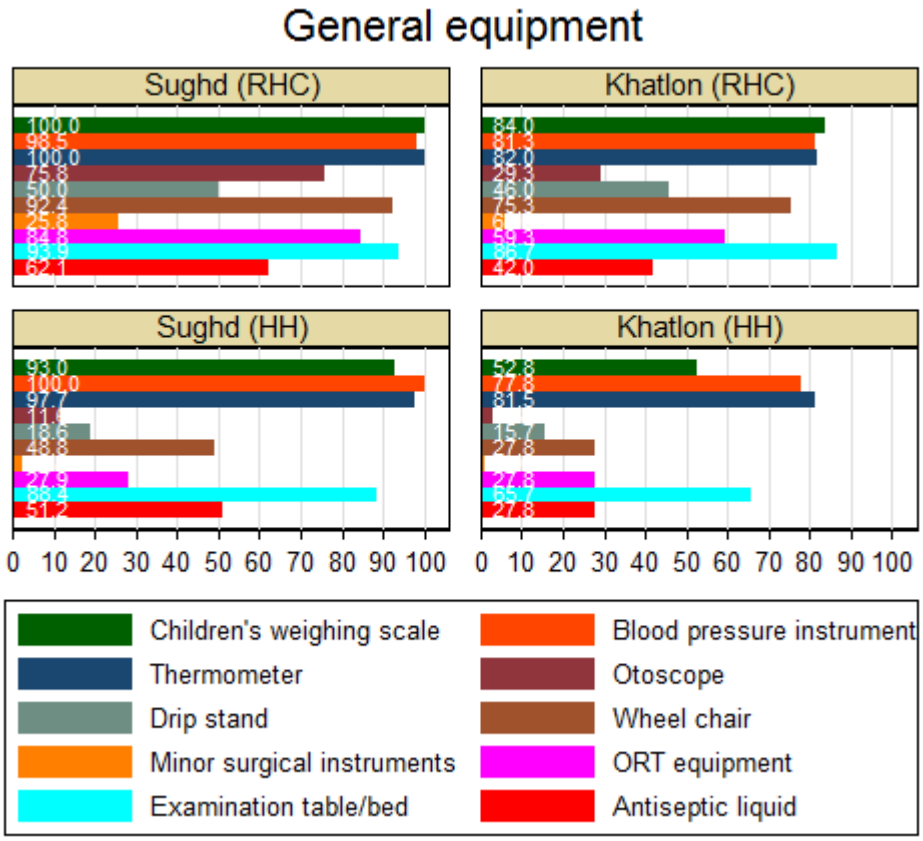


Figure 4-14: General equipment

The questionnaire asks separately for general equipment and equipment for vaccination and antenatal care. This means that the questionnaire for example can identify cases where a blood pressure instrument is available at the facility but not available for antenatal care.

Table 4.6.1: Availability of Equipment	Rural Health Centers			Health Houses		
	Sughd	Khatlon	All	Sughd	Khatlon	All
Antenatal Care						
Fetoscope	98.5	58.0	70.4	95.3	50.0	62.9
Blood pressure instrument	98.5	56.0	69.0	93.0	48.1	60.9
Tape measure	86.4	68.0	73.6	86.0	43.5	55.6
Adult weighing scale	78.8	56.7	63.4	55.8	30.6	37.7
Immunization						
Vaccine thermometer	89.4	86.0	87.0	58.1	39.8	45.0
Cold box / Vaccine carrier	97.0	84.7	88.4	93.0	80.6	84.1
Ice packs	97.0	83.3	87.5	90.7	74.1	78.8
Sample Size	66	150	216	43	108	151

Table 4.6.1: Availability of Equipment

4.7 Staff

Sughd has twice the number of authorized positions for Family Physicians and Family nurses as Khatlon in rural health centers. This does not correspond to the average catchment population in the two regions. Sughd reports on average 6700 and Khatlon 5000, i.e. the average ratio in Sughd is around one Family Physician per 1,700-catchment population and one Family nurse per 900-catchment population whereas the ration in Khatlon is 1:3,300 for family physicians and 1:1,500 for family nurses. According to standards in Tajikistan, one family doctor and two family nurses should serve 1,500 people of RHC population. On average, both regions fall short but more so in Khatlon.

For both regions, the challenge in filling positions seems highest for family physicians. In rural health centers in Sughd, 73.7 percent of the positions are filled and in Khatlon it is 58.4 percent.

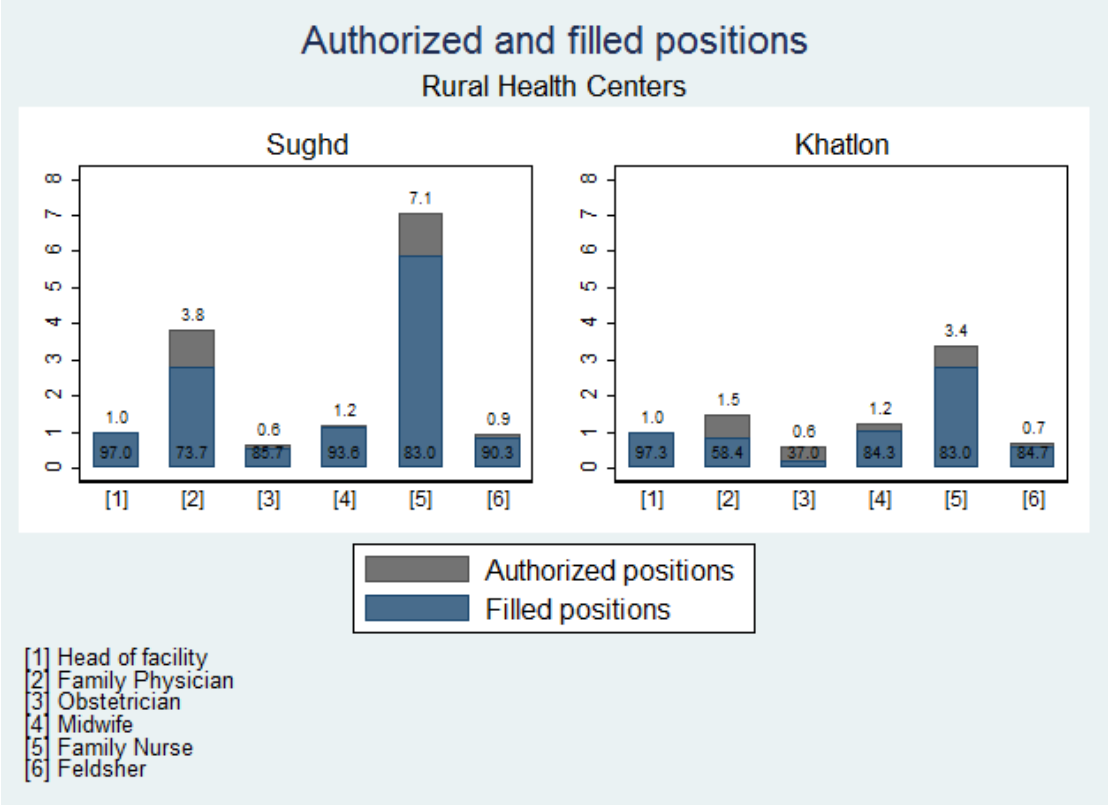


Figure 4-15: Authorized and filled positions in Rural Health Centers

Health houses are staffed by midwifes, family nurses and feldshers. On average, the health houses have 0.7 positions for midwifes in both regions, 1.8 family nurses in Sughd and 1.0 family nurses in Khatlon, 0.4 feldshers in Sughd and 0.2 positions for feldshers in Khatlon.

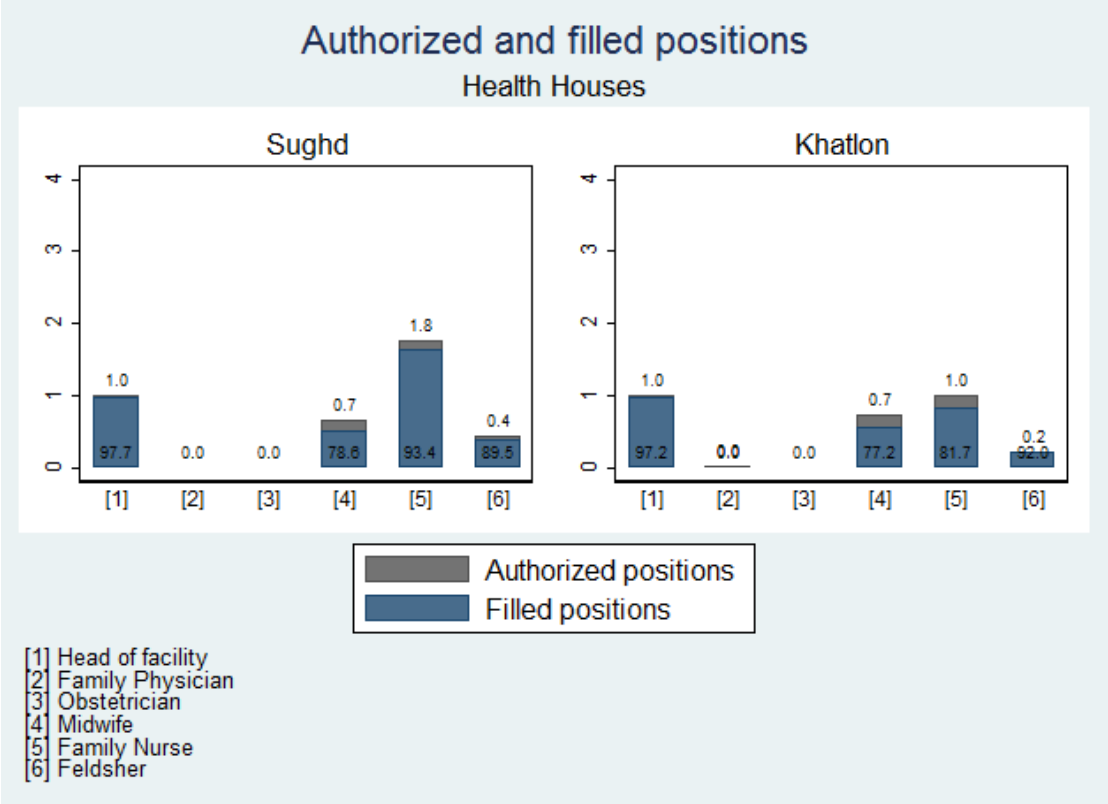


Figure 4-16: Authorized and filled positions in Health Houses

4.8 Citizen engagement and feedback

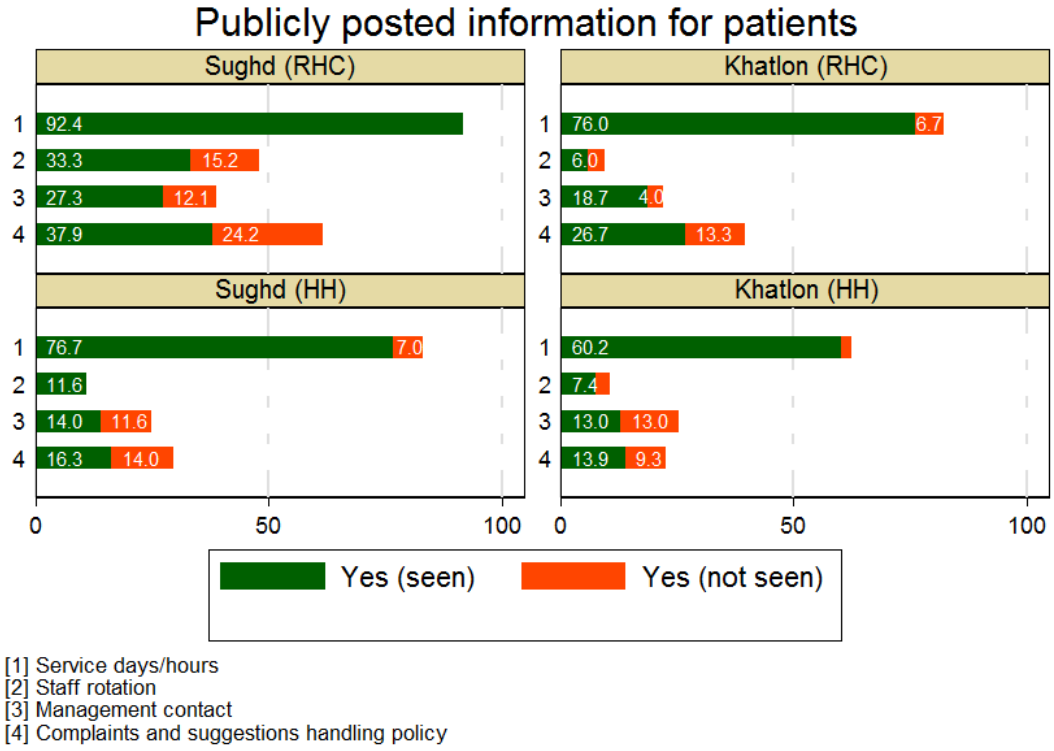
74 percent of rural health centers and 49 percent of health houses obtain patient feedback. In 84 percent of the rural health centers and 64 percent of the health houses the facilities also report that there is a formal mechanism to share patient feedback with staff. However, no facility reported making any changes based on this feedback.

Table 4.8.1: Patient Opinion	Rural Health Centers			Health Houses		
	Sughd	Khatlon	All	Sughd	Khatlon	All
Obtain information on patient opinion	72.7	74.7	74.1	32.6	55.6	49.0
By comment book	45.8	42.0	43.1	28.6	31.7	31.1
By interview	50.0	57.1	55.0	71.4	68.3	68.9
By helpline	4.2	0.9	1.9	0.0	0.0	0.0
Staff informed about patient opinion (conditional)	89.6	82.1	84.4	92.9	56.7	63.5
Any changes based on patient opinion (conditional)						

	No feedback received	29.2	33.0	31.9	21.4	33.3	31.1
	No changes but feedback received	70.8	67.0	68.1	78.6	66.7	68.9
Sample Size		66	150	216	43	108	151

Table 4.8.1: Patient Opinion

The following figure shows the percentages of facilities with publicly posted information for patients.



[1] Service days/hours
[2] Staff rotation
[3] Management contact
[4] Complaints and suggestions handling policy

Figure 4-17: Publicly Posted Information for Patients

4.9 Health worker knowledge and practice

Better quality of care is one of the intended outcomes of the PBF program. Quality assessment through vignettes and direct observations is a way to measure the difference between expected and actual performance and to identify opportunities for improvement. However, in the months of survey, the survey team had difficulty in identifying enough patients for direct observations. It is therefore decided, that the direct observations will not be included in the baseline report. This section will therefore assess health provider knowledge in terms on how guidelines are understood and interpreted in a case scenario situation.

Before turning to the vignettes, we will have a look at the health provider training and additional training needs identified by the health providers. There is no direct link in the questionnaire between the vignettes and the health provider interview. However, we will make an effort to make these sections comparable by including only family doctors and family nurses in RHCs.

The following figure shows the most recent in-service training for nine selected subjects, separately for Family Doctors and Family Nurses in RHCs. The nine selected subjects are the following: 1) IMCI, 2) Family planning, 3) ANC, 4) PNC, 5) Breastfeeding, 6) Nutrition, 7) Immunization, 8) Diabetes, and 9) Hypertension.

The overall picture shows how family nurses to a higher extend report not to have in-service training compared to family doctors.

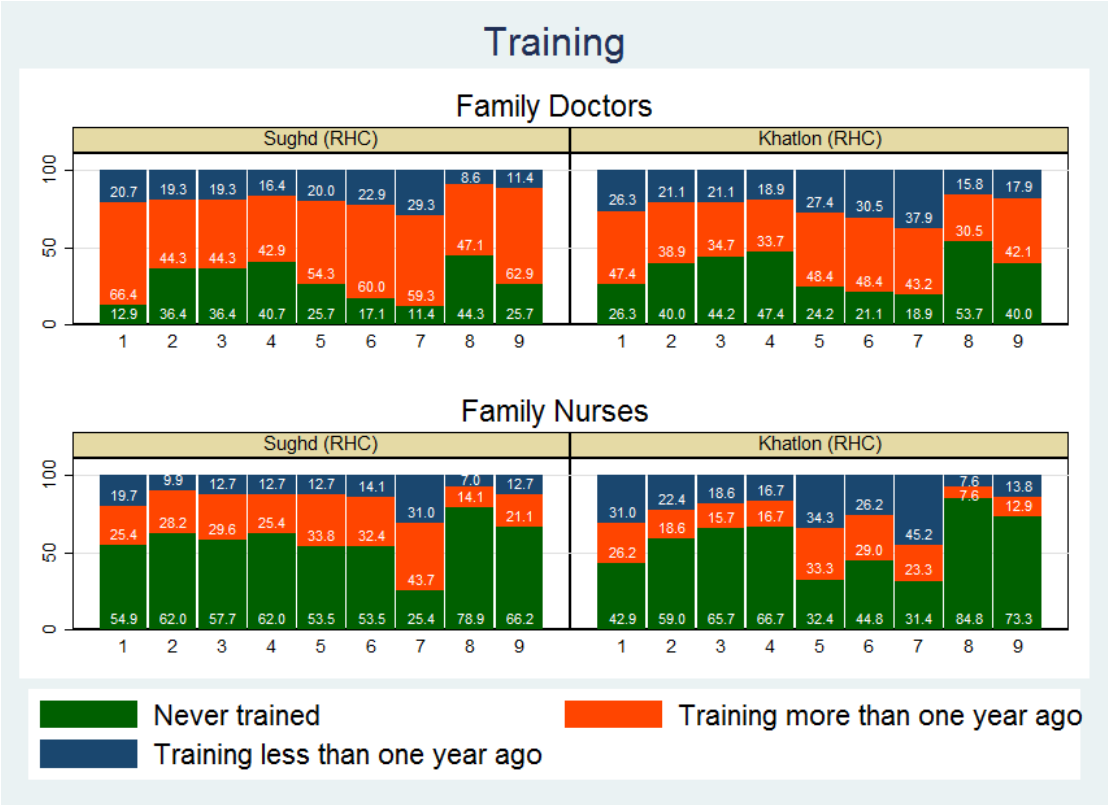


Figure 4-18: Training

The following figure shows the level of additional training needs identified by the health provider. For all selected subjects, more than half of the health providers mention that they need additional training for their present job. The level is marginally higher for family nurses compared to family doctors.

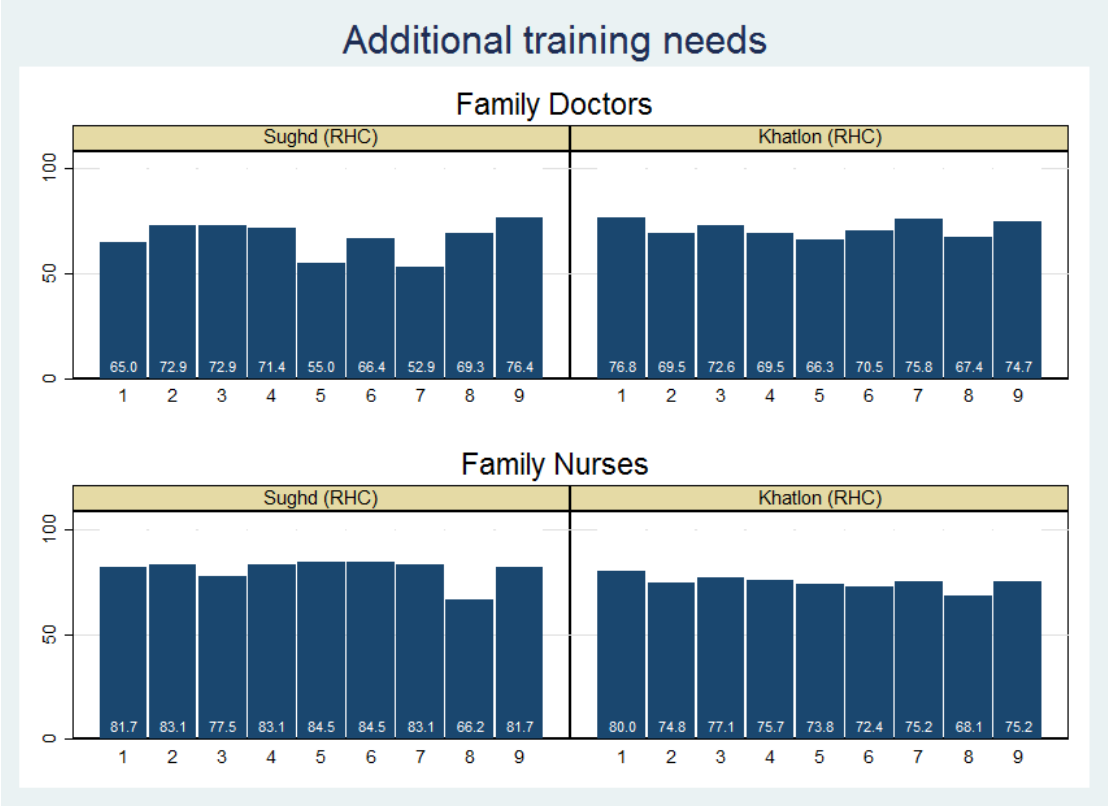


Figure 4-19: Additional training needs

4.9.1 Health Worker Knowledge: Vignettes

This section will look at vignettes answered by family doctors and family nurses in rural health centers. The report presents three vignettes; two vignettes concerning child health and one vignette concerning hypertension. Each of the vignettes is divided into three sections: assessment, correct diagnosis, and treatment. At the end of each section the health worker is provided with information so that the vignettes can correctly identify in which specific area provider knowledge needs strengthening (assessment, diagnosis or treatment).

Child health - Assessment

The first vignette is a severe dehydration scenario and the second vignettes is a non-severe pneumonia scenario. The analysis examines whether providers follow Integrated Management of Childhood Illness (IMCI) guidelines.

The following figures 4-20 and 4-21 present the average proportion of desired assessment questions that providers say they would ask and actions or physical examinations the providers report that they would carry out.

[1] refers to questions about danger signs asked, i.e., whether the child has difficulty breathing, has spasms or convulsions or has vomited. In the non-severe pneumonia scenario, it is explicitly stated that the child has difficulties in breastfeeding and this is therefore excluded from [1] for this scenario. Family doctors in Sughd and Khatlon asked about half of the danger signs. The level is lower for family nurses, especially in Khatlon.

[2] refers to examination of danger signs, i.e., whether the health provider reported that they would examine the child to check if he or she is lethargic, unconscious and/or is convulsing. Family doctors in Sughd examined for less than 40 percent of the danger signs in the severe dehydration scenario and for less than 30 percent in the pneumonia scenario. In Khatlon, the level is higher at 51 percent and 35 percent for the first and second scenarios respectively. Family nurses scored lower on both scenarios in both Sughd and Khatlon.

[3] refers to basic diagnostic questions. For the severe dehydration scenario, we define this to include general questions about the child's problem, temperature, fast and difficult breathing, and diarrhea. For the non-severe pneumonia case, this includes general questions about the child's problem, and to specifically ask about measles and cough. It is noteworthy that a large proportion of family doctors and nurses do not report that they would ask these basic diagnostic questions.

[4] refers to basic examinations needed for a correct diagnosis. For severe dehydration, we define this as weight and height measurement, temperature, counting breathing, mucous membrane, rash, and enlarged fontanelle. For the non-severe pneumonia, this includes weight and height measurement, temperature, examining the child's breathing, checking for a stiff neck, running nose, rash, red eyes, chest in drawing, stridor and wheezing. Over 40 percent and over 50 percent of family doctors in Sughd and Khatlon respectively failed to report that they would do these basic exams for the severe dehydration scenario. The proportion of family nurses who did not report that they would carry out these basic exams was even larger.

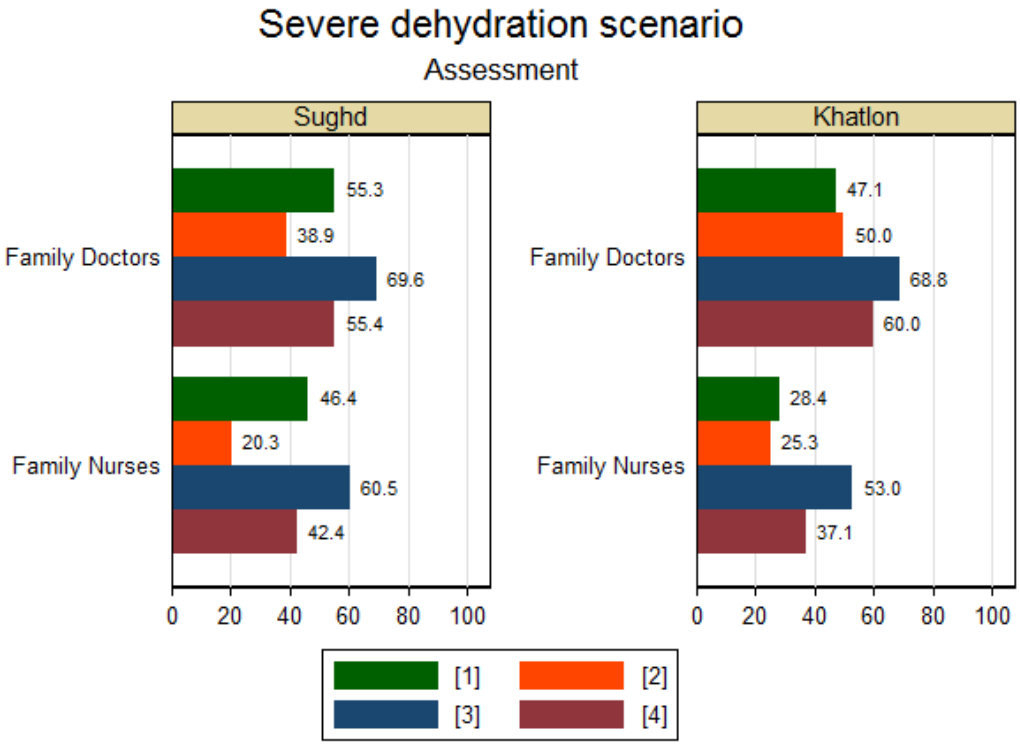


Figure 4-20: Severe dehydration scenario (assessment)

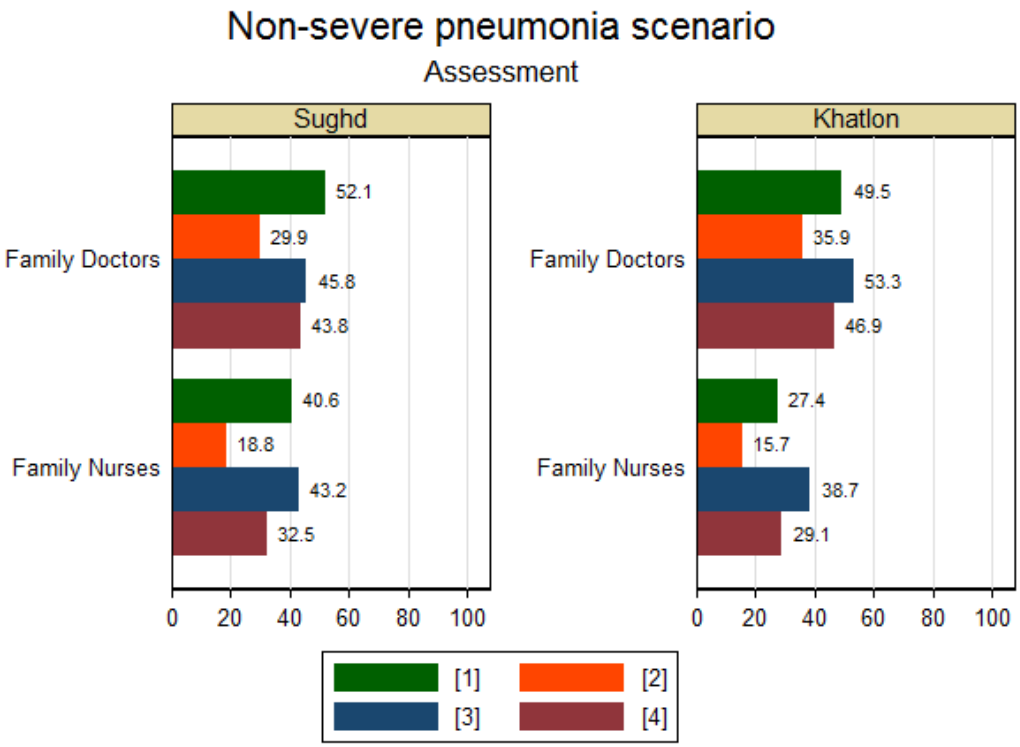


Figure 4-21: Non-severe pneumonia scenario (assessment)

CLASSIFICATION/ DIAGNOSIS

For the severe dehydration case, the health provider is informed that a 25-month-old child with diarrhea has two of the danger signs; she is lethargic and a skin pinch goes back very slowly. This is recognized as severe dehydration by 73 percent of the family doctors in Sughd and only 49 percent of the family doctors in Khatlon. For family nurses the level is 44 percent in Sughd and 22 percent in Khatlon.

For the non-severe pneumonia case, the health provider is informed that a six month old has high fever and a loud and fast breathing with no stridor or wheezing. The child has no general danger sign and should not be diagnosed with severe pneumonia or very severe disease. The level of correct diagnosis is similar to the first vignette. We find that that 68 percent of family doctors in Sughd are diagnosing non-severe pneumonia while 53 percent are diagnosing non-severe pneumonia in Khatlon.

Table 4.9.1.1: Classification	Sughd (RHC)	Khatlon (RHC)	All (RHC)
Scenario #1 (Severe dehydration)			
Family Doctors	72.9 (n=144)	48.9 (n=92)	63.6 (n=236)
Family Nurses	43.8 (n=64)	21.8 (n=261)	26.2 (n=325)
Scenario #2 (Non-severe pneumonia)			
Family Doctors	68.1 (n=144)	53.3 (n=92)	62.3 (n=236)
Family Nurses	35.9 (n=64)	21.8 (n=261)	24.6 (n=325)

Table 4.9.1.1: Classification (Scenario #1 and #2)

TREATMENT AND COUNSELING

For the treatment section, we should keep in mind that the health provider is informed about the diagnosis. This section is therefore an analysis of correct treatment given a diagnosis. The vignettes specifically instructed the provider to assume that all the necessary equipment, drugs and supplies to start treatment were available at their facility.

In the case of severe dehydration, it is important that IV fluids are administered immediately to the child at the health facility. In Sughd, 84 percent of the family doctors reported that they would refer immediately to the hospital but only 26 percent said they would start IV treatment. In Khatlon, 64 percent of the family doctors reported that they would refer to hospital and 49 percent would administer IV fluids immediately at the facility. It is noteworthy that a large share of providers reported that they would start antibiotic treatment, which is not indicated by the case, and could be harmful.

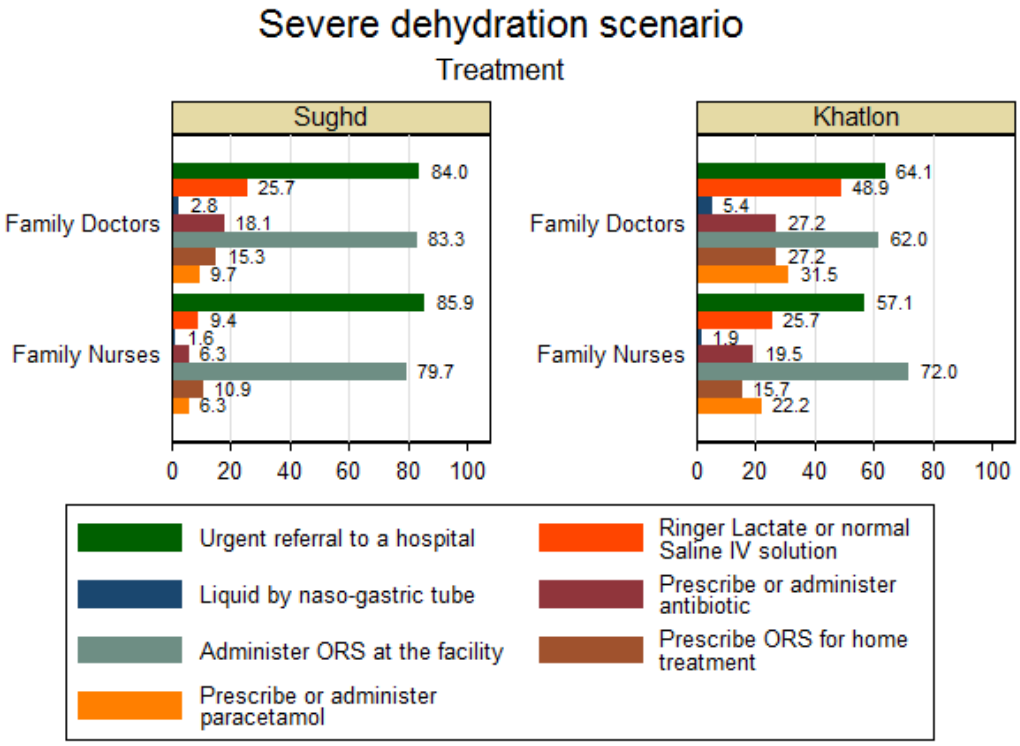


Figure 4-22: Severe dehydration scenario (treatment)

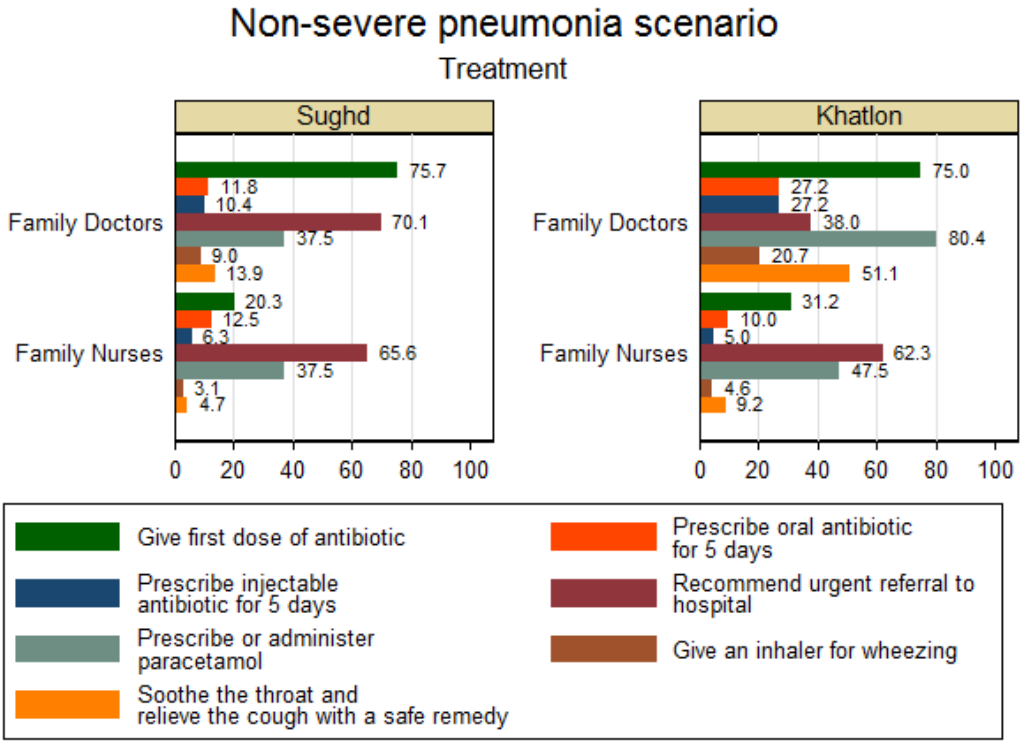


Figure 4-23: Non-severe pneumonia scenario (treatment)

The correct treatment in the case of non-severe pneumonia is to prescribe antibiotic treatment (oral amoxicillin, at least 40mg/kg/dose twice daily for 3 days). Only children who fail on first line treatment with amoxicillin should have the option of referral to hospital for second line treatment. However, 70 percent of family doctors in Sughd would recommend urgent referral to hospital and around 40 percent in Khatlon.

75 percent of family doctors in both Sughd and Khatlon would give the first dose of antibiotic at the health center while 12 percent in Sughd and 27 percent in Khatlon reported that they would prescribe oral antibiotics for 5 days.

For the child health vignettes, it is also asked for information the health provider would provide the caregivers. This is presented in the following four figures.

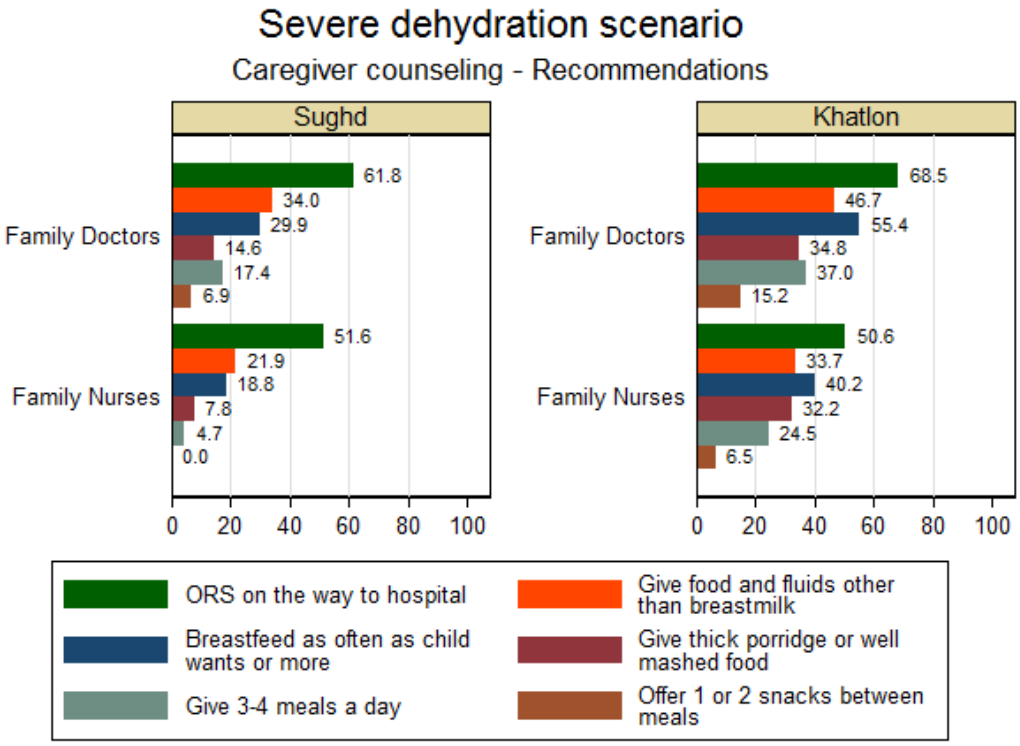


Figure 4-24: Severe dehydration scenario (Caregiver counseling – Recommendations)

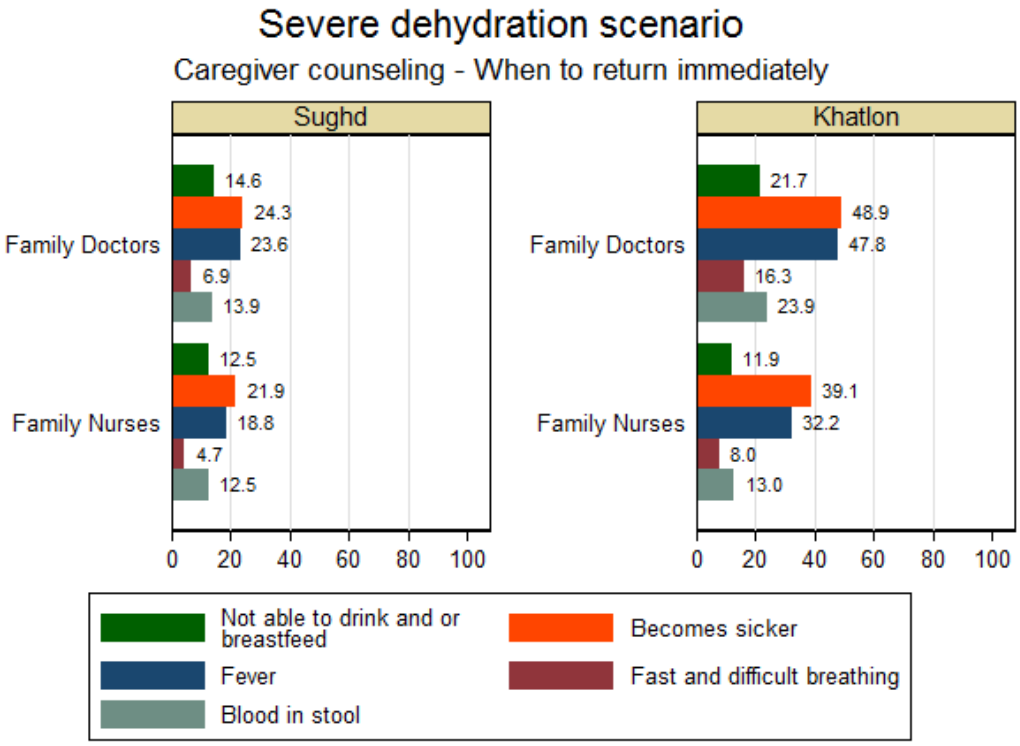


Figure 4-25: Severe dehydration scenario: Caregiver counseling – When to return immediately

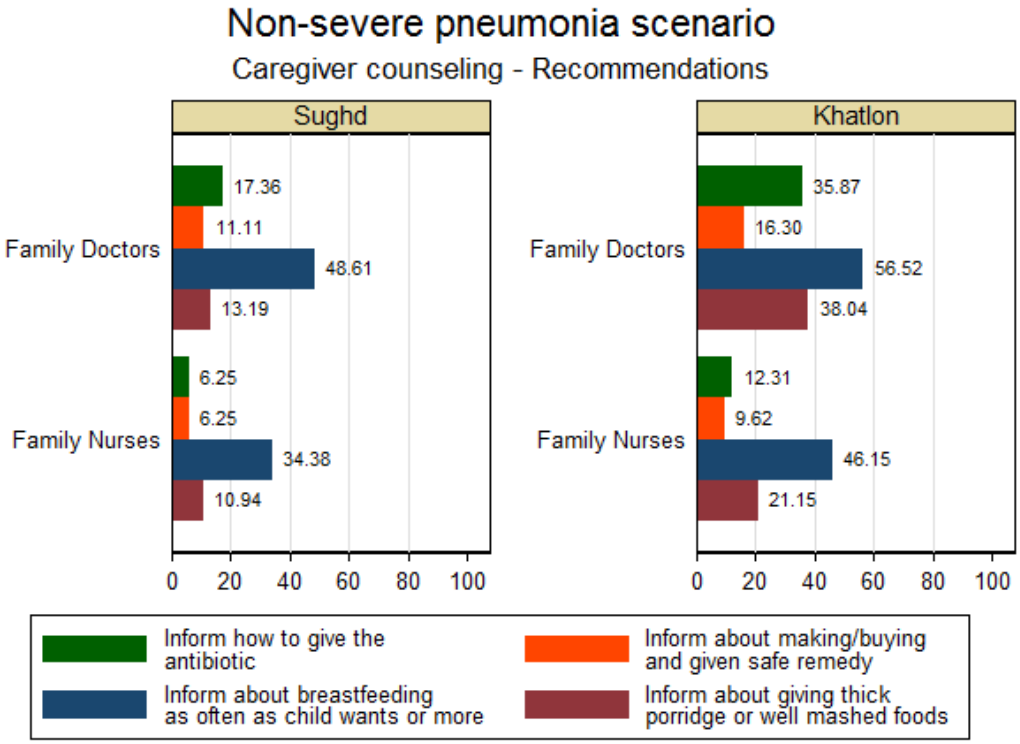


Figure 4-26: Non-severe pneumonia scenario (Caregiver counseling – Recommendations)

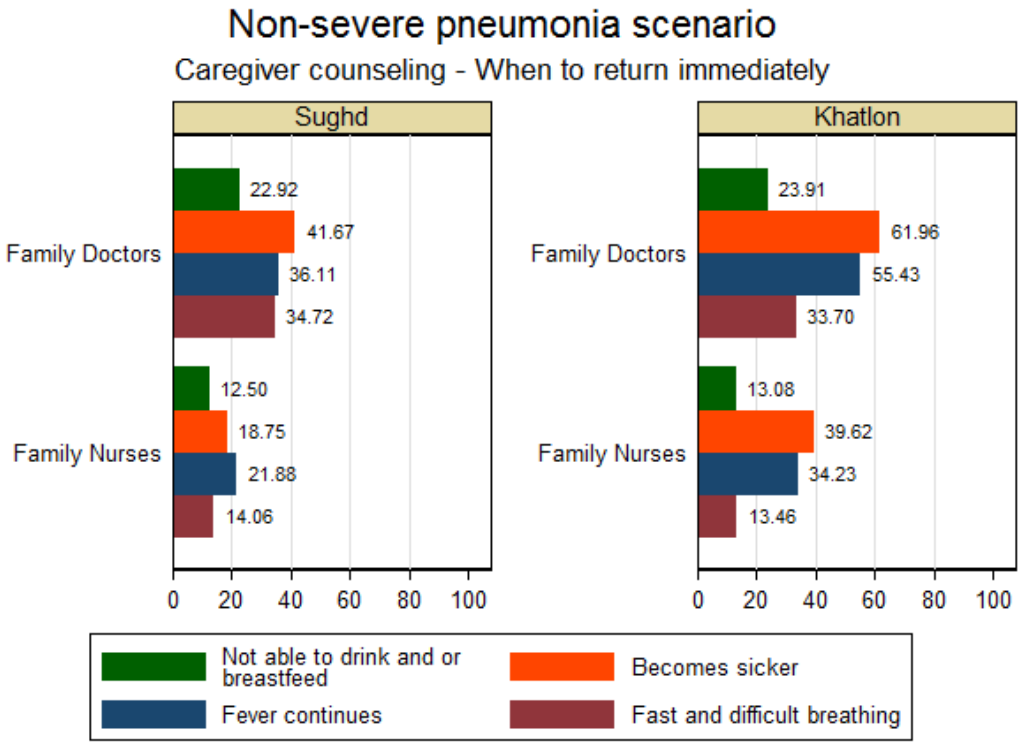


Figure 4-27: Non-severe pneumonia scenario (Caregiver counseling – When to return immediately)

Cardiovascular Risk Assessment

In the cardiovascular risk scenario, the vignette focus on assessing the patient in order to estimate the 10-year cardiovascular risk which will help inform the actions that must be taken by the provider. The scenario presented is for a patient who should be classified as 20 to 30 percent (or high) risk of developing cardiovascular disease. To estimate the risk, the health provider needs some basic information about the patient, like age and gender but also information about health behavior such as smoking status, drinking habits, physical activities, and diet. Yet another risk factor is family history of heart diseases. Essential for the risk estimation is also blood pressure, cholesterol, and blood glucose screening. The following figure presents the mean proportion of correct patient assessment questions / examinations that providers reported they would carry out organized in the following four categories:

[1] Asking about symptoms: Is it the first time with such symptoms, is the patient feeling nausea, has the patient vomited, decreased urinary, vision problems, and does the patient have chest pain.

[2] Asking about risk factors: Age, smoking status, alcohol intake, family history of premature coronary heart disease or stroke, diabetes status, physical activity, and diet.

[3] Asking about medication. Is the patient already on antihypertensive therapy or other kind of medication?

[4] Examining blood pressure and pulse, measure weight and height, ask for a urine sample and a blood sample, 12-lead electrocardiography.

Figure 4-26 below indicates that the mean proportion of correct assessment questions/ exams reported is quite low, indicating considerable scope to improve provider knowledge.

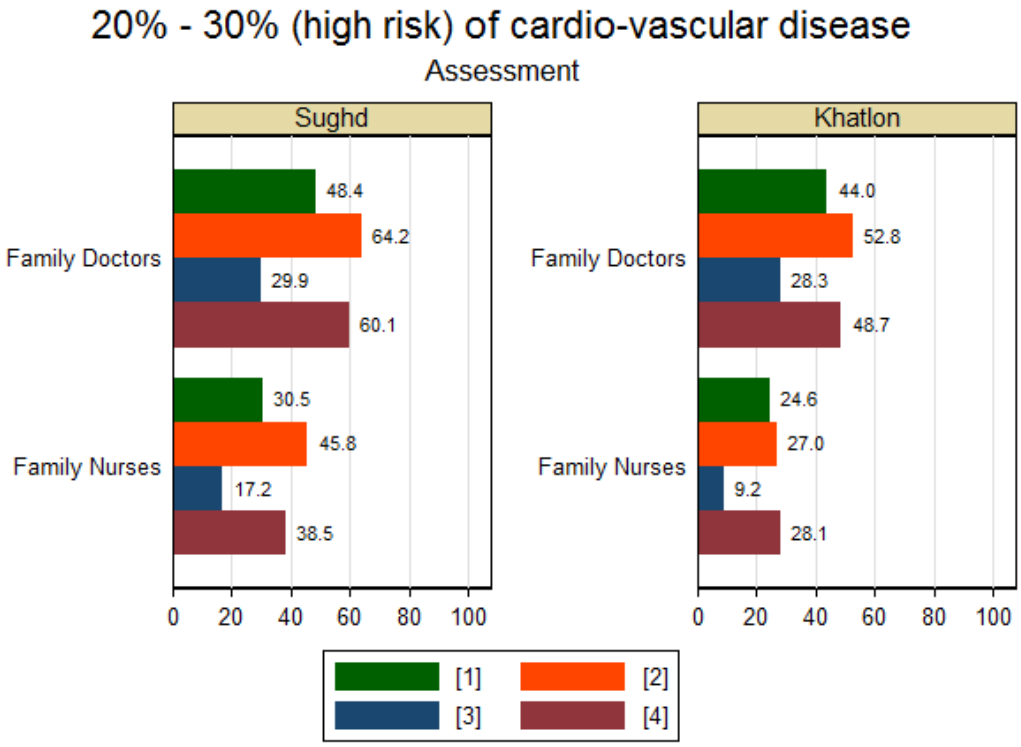


Figure 4-28: 20%-30% (high risk) of cardio-vascular disease (Assessment)

Correct classification

The cardiovascular risk vignette is a case of cardiovascular disease of a 65 year old. The risk factors in the vignette qualify for a high-risk category.

The classification section of the cardiovascular risk scenario is not asked as open as the child health vignettes. The health provider is guided in the direction of cardiovascular risk by the interviewer asking specifically about the risk level of the cardiovascular disease. 55 percent of family doctors in Sughd estimates high risk, whereas 45 percent of family doctors in Khatlon estimates high risk. Less than one-in-four of the family nurses estimates the high-risk level.

Table 4.9.1.2: Classification	Sughd (RHC)	Khatlon (RHC)	All (RHC)
Scenario #6 (High-risk of cardio-vascular disease)			
Family Doctors	54.9 (n=144)	44.6 (n=92)	50.8 (n=236)
Family Nurses	25.0 (n=64)	16.9 (n=261)	18.5 (n=325)

Table 4.9.1.2: Classification (Scenario #6)

Treatment/ counseling

When assessing hypertension, a patient should be observed several times as blood pressure fluctuates. The vignette is presented as a first time visit, however, it specifies that hypertension has been diagnosed previously and drug treatment should therefore be considered.

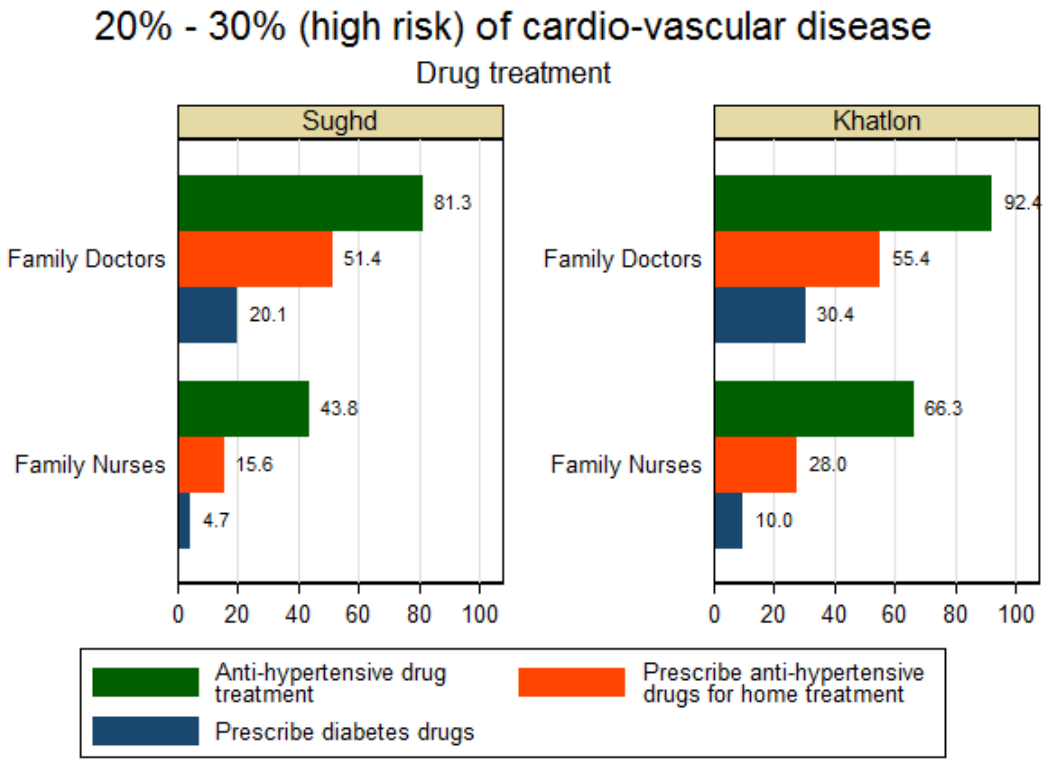


Figure 4-29: 20%-30% (high risk) of cardio-vascular disease (Drug treatment)

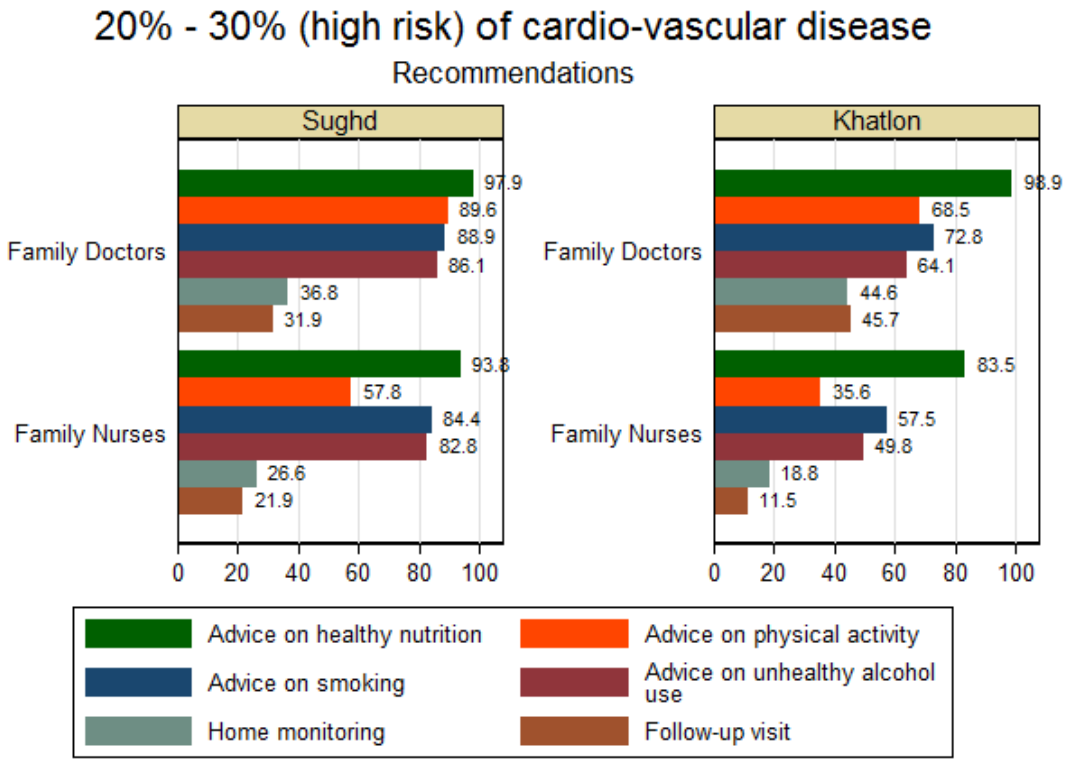


Figure 4-30: 20%-30% (high risk) of cardio-vascular disease (Recommendations)

5. Internal Validity

5.1. Household Indicators

The section reports results of balance tests for selected Household level indicators. As randomization is only used to evaluate the effect of the Citizen Score Cards (CSC) and Collaborative Quality Improvement (CQI) interventions and NCD outcomes were only supposed to be measured in treatment group 1 (PBF only) and the control group, this section will focus on households selected for a recent pregnancy only.

Table 5.1.1 shows overall good balance with respect to household characteristics. Comparison of the households in the catchment areas of CSC and CQI facilities did not results in any significant differences in characteristics. The only tested indicator that appears to not be balanced is number of adults over 18 when comparing the PBF-only catchment areas to the CSC ones.

Table 5.1.1: Balance (Household characteristics)	PBF and non-PBF districts						
	CSC	CQI	T-test[1]	p-value[1]	None	T-test[2]	p-value[2]
Indicators							
Number of HH members	8.9	8.9	-0.09	0.927	9.3	1.31	0.193
Number of adults 18+	4.9	4.9	0.34	0.732	5.2	2.26	**0.024**
Number of children 5-	1.2	1.2	-0.48	0.630	1.4	1.42	0.156
Head of household (percent male)	84.8	83.1	-0.98	0.328	82.4	-1.37	0.171
Access to improved source of water	54.6	54.3	-0.49	0.623	55.5	1.30	0.194
Access to improved sanitation	61.4	63.3	0.39	0.696	62.9	0.31	0.760
Sample Size	1,428	1,439			1,478		

Table 5.1.1: Balance (Household Characteristics)

[1]) T-test and p-value for mean difference between CSC and CQI treatment arms. The t-test is adjusted for clustering at the catchment level. [2]) T-test and p-value for mean difference between CSC and None treatment arms. The t-test is adjusted for clustering at the catchment level.

Table 5.1.2 shows that the selected background characteristics of women with a recent birth are balanced across the treatment arms. The maternal health indicators show that women in PBF and control group clusters tend to be less likely to have a skilled ANC visit or deliver in a formal health facility. However, this is only significant at the 10 percent level. Women in the CSC clusters are more likely to have a PNC visit within 3 days compared to women from CQI clusters (significant at 5 percent level) and compared to women from PBF and control group clusters (significant at 10 percent level).

	PBF and non-PBF districts

Table 5.1.2 Balance (Women with a recent	CSC	CQI	T-test[1]	p-value[1]	None	T-test[2]	p-value[2]
Indicators - Background							
Age	26.5	26.2	-0.85	0.399	26.5	0.27	0.790
Marital status (married)	97.2	97.4	0.28	0.778	97.2	-0.01	0.991
Education level (less than completed secondary)	39.0	39.2	0.05	0.960	36.3	-0.68	0.499
Literate	53.1	49.7	-0.95	0.342	54.8	0.47	0.638
Employment (housewife)	94.5	91.9	-1.87	0.063	92.7	-1.29	0.197
Sample Size	904	961			938		
Indicators – Maternal Health (live births)							
Number of births	2.4	2.3	-0.66	0.511	2.4	-0.10	0.921
Any skilled ANC visit	93.4	92.1	-0.60	0.547	87.8	-1.94	0.054
Number of ANC visits (conditional)	4.7	4.8	0.19	0.851	5.0	0.73	0.466
ANC visit at RHC (conditional)	61.5	61.8	0.06	0.954	59.6	-0.32	0.747
Iron supplementation (conditional)	53.7	53.5	-0.03	0.977	51.2	-0.57	0.571
Delivery at formal health facility	89.2	90.9	0.80	0.422	84.5	-1.69	0.092
PNC <=3d	68.0	59.1	-2.48	**0.014**	61.5	-1.87	0.062
Initiation of breastfeeding within first hour (conditional)	45.3	37.5	-1.62	0.106	41.3	-0.85	0.394
Sample Size	749	794			767		

Table 5.1.2 Balance (Women with a recent pregnancy)

[1]) T-test and p-value for mean difference between CSC and CQI treatment arms. The t-test is adjusted for clustering at the catchment level. [2]) T-test and p-value for mean difference between CSC and None treatment arms. The t-test is adjusted for clustering at the catchment level.

Table 5.1.3 shows that the selected indicators of children less than five in households selected for a recent pregnancy are balanced.

Table 5.1.3 Children less than 5	PBF and non-PBF districts						
	CSC	CQI	T-test[1]	p-value[1]	None	T-test[2]	p-value[2]

Indicators - Background								
	Age (month)	27.0	26.7	-0.65	0.516	27.1	0.16	0.870
	Gender (male)	50.7	50.6	-0.04	0.965	50.2	-0.25	0.805
Indicators – Child Health								
	Measured in past 6 months	14.2	13.5	-0.28	0.783	15.4	0.42	0.672
	Underweight	17.6	18.8	0.74	0.461	17.0	-0.36	0.718
	Wasted	14.1	13.6	-0.30	0.761	13.0	-0.61	0.542
	Stunted	30.9	29.0	-0.93	0.352	30.4	-0.26	0.798
Sample Size		2,689	2,699			2,762		

Table 5.1.3: Balance (Children less than 5)

[1]) T-test and p-value for mean difference between CSC and CQI treatment arms. The t-test is adjusted for clustering at the catchment level. [2]) T-test and p-value for mean difference between CSC and None treatment arms. The t-test is adjusted for clustering at the catchment level.

5.2. Facility Indicators

The following tables show results of balance checks for the facility survey. Only rural health centers are included in the tests. In the following tables, F-tests and p-values are reported for the null hypothesis that all three intervention arms have the same mean response. None of the selected indicators from the facility survey shows any significant differences at the 5 percent level and only the indicator for a place to store drugs shows significant differences at the 10 percent level.

Table 5.2.1 Balance (General information)		**PBF and non-PBF districts**				
		CSC	CQI	None	F-test	p-value
	Distance to nearest higher level health facility	15.1	19.9	18.5	2.21	0.112
	Number of health houses	1.6	1.7	1.6	0.04	0.964
	Catchment population	6544.5	4721.4	5374.8	0.79	0.457
	Access to improved source of water	65.3	63.9	54.2	1.11	0.333
	Access to functioning toilet facility	76.4	86.1	88.9	2.30	0.103
	Access to functioning transportation	9.7	15.3	16.7	0.81	0.447
	Facility work plan	73.6	63.9	69.4	0.80	0.453
	Number of staff meetings in past 3 months	9.5	11.2	10.9	0.86	0.426

	Authorized positions (family doctors)	2.1	1.7	1.7	0.50	0.608
	Authorized positions (midwifes)	1.1	1.0	0.9	0.67	0.514
	Authorized positions (family nurses)	3.0	4.5	2.5	0.63	0.535
Sample Size		72	72	72		

Table 5.2.1 Balance (General Information)

Table 5.2.2 Balance (Offered Services)		**PBF and non-PBF districts**				
		CSC	CQI	None	F-test	p-value
	ANC	95.8	97.2	97.2	0.15	0.864
	PNC	98.6	100.0	100.0	1.00	0.370
	Hypertension	95.8	91.7	94.4	0.57	0.568
	Laboratory services	15.3	22.2	23.6	0.88	0.416
Sample Size		72	72	72		

Table 5.2.2: Balance (Offered Services)

Table 5.2.3 Balance (Drug Storage and Availability)		**PBF and non-PBF districts**				
		CSC	CQI	None	F-test	p-value
	A place to store drugs	45.8	63.9	59.7	2.65	0.073
	Availability of OPV (conditional)	39.4	43.5	30.2	0.85	0.431
	Availability of Pentavalent (conditional)	48.5	60.9	62.8	0.88	0.416
	Availability of TT (conditional)	42.4	50.0	46.5	0.22	0.805
	Availability of pregnancy testing kit (conditional)	12.1	19.6	27.9	1.45	0.240
	Availability of condoms (conditional)	81.8	89.1	79.1	0.86	0.424
	Availability of oral contraceptive tablets (conditional)	78.8	82.6	81.4	0.09	0.913
	Availability of depot medroxyprogesterone acetate (conditional)	39.4	41.3	37.2	0.08	0.927
Sample Size		72	72	72		

Table 5.2.3: Balance (Drug Storage and Availability)

Table 5.2.4 Balance (Equipment)	**PBF and non-PBF districts**				
	CSC	CQI	None	F-test	p-value

	Fetoscope	68.1	69.4	73.6	0.29	0.752
	Blood pressure instrument	65.3	68.1	73.6	0.60	0.549
	Tape measure	70.8	75.0	75.0	0.21	0.809
	Adult weighing scale	70.8	61.1	58.3	1.34	0.265
	Thermometer	88.9	84.7	87.5	0.28	0.753
	Cold box / Vaccine carrier	90.3	86.1	88.9	0.31	0.731
	Ice packs	87.5	88.9	86.1	0.13	0.882
	Refrigerator	93.1	88.9	87.5	0.65	0.522
Sample Size		72	72	72		

Table 5.2.4: Balance (Equipment)