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Improvement in access and equity for maternal and neonatal health services: comparative advantages of contracted-out versus non-contracted-out facilities

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Improvement in Access and Equity for Maternal and Newborn Health Services: Comparative Advantages of Contracted out versus Non-Contracted Facilities

Research Report
September 2013

Department of Community Health Sciences,
Aga Khan University, Karachi

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Declaration

"I have read the report titled *Improvement in Access and Equity for Maternal and Newborn Health Services: Comparative Advantages of Contracted out versus Non-Contracted Facilities,* and acknowledge and agree with the information, data and findings contained".

Dr Shehla Zaidi
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Abbreviations

AJK	: Azad Jammu and Kashmir
AKHS, P	: Aga Khan Health Services, Pakistan
AKU	: Aga Khan University
ANC	: Antenatal Care
BCC	: Behaviour Change Communication
BCG	: Bacillus Calmette Guerin
BEmONC	: Basic Emergency Obstetric and Newborn Care
BHUs	: Basic Health Units
BIPS	: Benazir Income Support Programme
BMC	: Booni Medical Centre
BSC	: Balanced Score card
CEmONC	: Comprehensive Emergency Obstetric and Newborn Care
CHNs	: Community Health Nurses
CIs	: Confidence Intervals
DHO	: District Health Officer
DHQ	: District Headquarter Hospital
DoH	: Department of Health
EDOH	: Executive District Officer Health
EPI	: Expanded Programme of Immunisation
ERC	: Ethical Review Committee
FGD	: Focus Group Discussion
FLCF	: First Level Care Facility
FTEs	: Full Time Equivalents
GP	: General Practitioners
HCPs	: Health Care Provider's
HF	: Health Facility
HFA	: Health Facility Assessment
HMIS	: Health Management Information System
IMNCI	: Integrated Management of Neonatal and Child Illnesses
IMPAC	: Integrated Management of Pregnancy and Child birth
KM	: Kilo Meters
KP	: Khyber Pakhtunkhwa
LHV	: Lady Health Visitor
LHW	: Lady Health Worker
MNCH	: Maternal Newborn and Child Health
MNH	: Maternal and Newborn Health
MO	: Medical Officer
MSH	: Management Sciences for Health
NBC	: National Bioethics Committee
NGO	: Non-Government Organisation
NMNH	: National Maternal and Neonatal Health
OOP	: Out of Pocket
OPD	: Out Patient Department

ORS	: Oral Rehydration Salt
PC	: Principal Component
PCA	: Provider Cost Analysis
PDHS	: Pakistan Demographic Health Survey
PHC	: Primary Health Care
PKP	: Pakistani Rupee
PNC	: Postnatal Care
PPAF	: Pakistan Poverty Alleviation Fund
PPHI	: Peoples Primary Health Care Initiative
RAF	: Research & Advocacy Fund
RHC	: Rural Health Centre
SES	: Socio-Economic Status
SPA	: Service Provision Assessment
SPSS	: Statistical Package for Social Sciences
THQH	: Taluka Head Quarter Hospital
TRF	: Technical Resource Facility
TT	: Tetanus Toxoid
UN	: United Nations
UNICEF	: United Nations International Children's Fund
USD	: United State Dollar
WHO	: World Health Organisation
WMO	: Woman Medical Officer
WTP	: Willingness to Pay

Executive Summary

Contracting out initiatives have expanded in Pakistan and in other developing countries. While these have resulted in generally increased service utilisation (Liu 2008; Loevinsohn & Harding 2005), there is a lack of conclusive quality evidence as to whether these improve Maternal and Newborn Health (MNH) services (Zaidi, et al. 2012, Lagarde & Palmer 2009). There is a need for rigorous case studies to fill data gaps.

In this study, we took a comprehensive look at the performance of contracting out on MNH services. The contextual setting is of contracted out government facilities in remote rural settings. We compared Rural Health Centres (RHCs) having contractual arrangements with Non-Governmental Organisations (NGO) to RHCs routinely managed by government. Contracted out RHCs served more remote locations than other comparable facilities in the district.

The assessment was wide ranging, comprising i) population based utilisation, ii) coverage of preventive care in the community, iii) quality of services, iv) underlying client dynamics, v) changes in patient expenditure, and vi) costs of MNH services at contracted facilities.

We found the following salient findings:

Does contracting out increase access?
There was significantly higher utilisation of contracted out RHCs as compared to non-contracted RHCs for a range of MNH services, including Antenatal Care (ANC), delivery, Postnatal Care (PNC) and newborn care. Emergency care was variable and higher utilisation was confined to only that contracted site which had CEmONC facility. However, ANC use in contracted out sites was regressively distributed towards more educated mothers and those in the higher income groups while other services if not showing a regressive pattern also did not show a progressive pattern.

Are better quality services provided?
Contracted out RHCs are better equipped in terms of drugs, equipment and diagnostic facilities, and staff satisfaction, as compared to non-contracted RHCs; however, there is little difference between contracted out and non-contracted RHCs in terms of technical processes of care, staff capacities, and patient satisfaction.

Does contracting out improve outreach preventive services?
There is only modest improvement in preventive care knowledge and practices in the community, and is influenced by contractual incentives and control. The improvements are mainly seen in the contracting out model that provides outreach control to contracted provider, and is confined to maternal care with little translation into family planning and newborn care.

Do clients prefer contracted out sites?
There is a higher preference for the use of RHC in the case of contracted sites but decisions to use the health facility are complex and influenced by affordability, transportation, and cultural considerations. Husbands are the major deciders for visit to health facility but are often not the recipient of awareness building measures.

Can contracting out bring down patient expenditure?
While there is increased utilisation, it comes at a cost. There is a higher out of pocket

expenditure by patients on diagnostics; transport and attendants costs in contracted out as compared to non-contracted sites, but probably lower than what patients might have incurred in the case of non-functional services where they had to go to longer distances to procure care. On adjustment of transport, patients actually incur lesser expense than non-contracted sites on delivery and newborn illness, similar expense for C-Section and complicated delivery but higher charges for ANC due to user charges for accompanying diagnostics.

Can community pay for services?
There is better community Willingness to Pay (WTP) in contacted sites versus non-contracted sites linked to better supply of services. However, clients in both contracted out and non-contracted sites have low WTP for preventive services such as ANC, PNC, immunisations, and contraception, requiring better awareness and demand creation. In contracted out sites, actual expenditure in far exceeds WTP and tends to deplete savings in emergency situations. There is an absence of community based and institutional safety nets for recourse.

Unit costs at contracted out sites:
Unit costs were calculated from a range of MNH services. Service costs at contracted out remote facilities are likely to be higher than routinely functioning RHCs due to the remoteness of contracted out sites, which requires additional expense to operate and also has supposedly higher case acuity.

POLICY IMPLICATIONS

- Contracting out of government facilities to NGOs can comparatively increase access to MNH services in remote rural settings. Confined contracting of government health facilities in disadvantaged locations can be strategically employed as a health systems innovation. This is a policy option that should be considered against blanket contracting of both well and poorly functioning facilities as being currently practiced in Pakistan.

- Accompanying measures for transportation, behavioural change, enhancing women's economic autonomy and protection from catastrophic expenditure are needed to accompany contracting out in remote rural settings. These must necessarily involve male members of the household, due to their pivotal role in decision-making. Such measures may include conditional cash transfers and vouchers to stimulate demand for preventive services; male inclusive Behaviour Change Communication (BCC) strategy; safety nets such as community insurance, community saving funds, and health equity funds; and linkage with female economic empowerments chemes such as the Benazir Income Support Programme (BISP).

- Contract design needs to carefully build in incentives for quality of services and outreach coverage. Some important areas that need to be considered are as follows:

  I. Relatively better coverage of MNH services is seen when administrative control of both

facility and outreach services is given to the contracted provider.

II. Contracting out need not result in better quality care processes; hence, standard operating procedures are needed to accompany contractual arrangements.

III. There is a likelihood of under estimation of contracting out budget in remote settings, as the routine government budget for health facility will be insufficient to upgrade services, draw in staff and offer an expanded range of services.

Chapter 1: Background

1.1 Research Question

What is the comparative effectiveness, if any, of contracted out RHCs versus non-contracted RHCs in providing access to quality MNH services and reduction of financial barriers?

1.2 Background

Challenges to maternal and newborn health in Pakistan: Clustering of mortality remains high around delivery and the postnatal period in Pakistan requiring sufficient access to quality services but health facility utilization at public sector facilities remains low and is a source of concern. Only 8.2 % of rural women use public sector health facilities for delivery (child birth) in Pakistan, with 53.5 and 18.7 % rural women seeking antenatal and postnatal care respectively from skilled providers (PDHS, 2007). Health care services are directly financed and delivered by the provincial Departments of Health (DoH) through a well-structured primary health care system of 5336 Basic Health Units (BHUs) and 560 Rural RHCs. Inadequate presence of required staff, frequent stock out of essential drugs, poor availability and maintenance of equipment at frontline government facilities (TRF, 2011), however, leads to poorly functioning services and low utilization. Poor availability of services and quality of care issues at public sector facilities forces patients to either forego care, defer care until complications arise or utilize the private sector with its unregulated care. Households are also vulnerable to costs incurred during and around childbirth and Out of Pocket (OOP) patient expenditure is high for supposedly free MNH services at under-equipped government facilities as a result of patients paying for essential supplies and even higher at private sector facilities (Zaidi & Bhutta, 2009). It is pertinent therefore to explore innovative ways of health delivery to improve utilization of routine and Basic Emergency Obstetric and Newborn Care (BEmONC) in Pakistan.

What is contracting out?
Lately new innovations in health service delivery have mushroomed in Pakistan involving a split in financing and provision function. Contracting out involves a formal agreement between government as the financier and a private sector or autonomous government provider for mutually agreed set of services, in a specified location over a defined period (Taylor, Preker, & Harding, 2003). Contracting out is usually practiced for areas where government has weak ability to provide services and can strengthen the stewardship role of government to strategically identify finance and monitor services.

Contracting out in Pakistan: In Pakistan the management of government BHUs have been contracted out across all four provinces, Azad Jammu & Kashmir (AJK) and Gilgit-Baltistan to the People's Primary Health Care Initiative (PPHI) which manages 48% of all first level Primary Health Care (PHC) facilities in Pakistan (Martinez et al., 2010). In addition there has been piecemeal contracting out of individual facilities in remote districts to national Organisation NGOs to augment services at government facilities. Additionally, contracting out is underway in Sindh through the Norwegian Pakistan Partnership Initiative, and in Khyber Pakhtunkhwa (KP) supported bilaterally as well as by

the World Bank. While contracting out is underway, there is a need to concertedly examine whether contracting out results in improvement of MNH services and in which aspects of MNH services.

1.3 Knowledge Gaps and Rationale

Evidence from developing countries suggest that contracting out healthcare services has generally resulted in increased utilization of healthcare services through improving delivery of health services (Lagarde & Palmer, 2009; Liu, Hotchkiss, & Bose, 2008). However there is a dearth of robust studies to establish increased utilization of maternal and newborn services as a result of contracting out of services (Zaidi, 2012). Second, even where contracting out has increased utilization there is little evidence about equitable penetration to more disadvantaged groups such as those who are poorer or living at further distance from health facilities. Third, there is also a dearth of information as to whether increased access comes at an increased cost to patient as there has been little assessment of Out of Pocket (OOP) expenditure by patients. Lastly, most research has tended to measure quantitative outputs and less is known about qualitative aspects of client decision making and perceived barriers related to use of contracted out facilities.

1.4 This Study

In this study we attempt to undertake an in-depth and robust assessment of contracting out MNH services to fill the above mentioned data gaps. Our specific context is selected government RHCs in remote rural setting where an NGO had been contracted with the intent of providing MNH services. These RHCs were considered particularly challenging due to the remoteness of their locations and prior MNH services were non-functional.

The RHCs service package of routine MNH and BEmONC services is assessed against the standardized service package guidelines of the provincial departments of health. Two contracted out RHCs, one each in Thatta district of Sindh and Chitral district of KP, were compared with four government managed RHCs controls.

Effectiveness of contracting out is assessed in terms of i) performance impact on MNH utilization and quality; ii) changes in patient expenditure; iii) equitable penetration of benefits to the disadvantaged; and iv) client decision making, provider preferences and barriers affecting use of contracted out facilities. Furthermore we estimated unit cost of MNH service provision in contracted out facilities to inform resource envelope needed for running a model of contracted out facility.

1.5 Research Questions

1. What is the comparative facility and population based utilization of MNH services in contracted out vs. non-contracted RHCs?
2. What is the relative quality of care and patient satisfaction with MNH services in contracted out vs. non-contracted RHCs?
3. What is the level of OOP expenditure in utilizing MNH services in contracted out versus non-contracted RHCs?
4. Are service coverage and patient costs equitably distributed amongst

households in contracted out vs. non-contracted catchment areas?

5. To explore client perceptions of barriers for MNH service utilization, underlying preferences and decision making.
6. What are the provider related unit costs for implementation of BEmONC and CEmONC contracted out models?

1.6 Target Audience

The research is intended for policy stakeholders within provincial and district governments, NGOs, researchers and development partners involved in innovating to improve access to health services. It informs on potential utility of contracting NGOs for improving utilization, quality and equitable access of MNH services in disadvantaged settings. It also attempts to inform whether contracting out is sufficient by itself to reduce patient expenditure or requires further accompanying policy measures. Lastly, by providing unit costs of contracted out services it helps to inform on the resource envelope needed for contracting out.

1.7 Setting of Contracted out RHCs

In Thatta, contracted out RHC Keti-Bunder is located in the most remote and underdeveloped Taluka/ Tehsil (sub-district) of Keti-Bunder. Distance from RHC to next level health care facility in Mirpur-Sakro is 70 kilometre and requires 1.5 hours' drive on personal vehicle.
Most area of District Thatta is rural with 11% population living in urban areas (census, 1998), and socio-economically it is the second most deprived district of Sindh province (SPDC, 2001).

In Chitral, contracted out RHC Shagram is also located in the remote Taluka/ Tehsil (sub-district) Shagram. The next level health care facility to RHC Shagram is Booni Medical Centre (BMC) of AKHS, P and Tehsil Headquarter Hospital (THQH) of Department of Health (DoH). The distance from RHC Shagram to BMC and THQH is 58 km and almost 1.5 hours travel time which may increase due to weather conditions.

1.8 Contractual Interventions

The selected RHCs were contracted out to the Aga Khan Health Service Pakistan (AKHS, P) - A well-established NGO working for four decades in health systems in rural disadvantaged settings and linked with the international Aga Khan Health Services (AKHS) working in Bangladesh, Afghanistan, East Africa and Central Asia. AKHS is a not for profit, non-governmental organisation providing primary health care and curative services in Afghanistan, India, Kenya, Pakistan, and Tanzania, and provides technical assistance to government in health service delivery in Kenya, Syria and Tajikistan. AKHS, P now operates 47 health centres in Karachi, 27 in other parts of Sindh, 14 in Punjab and KPK provinces, 33 in the Northern Areas and 31 in Chitral. Contractual interventions differed in both RHCs.

Type of contracts & scope of service: In Thatta, a service delivery contract was in place, contracting the AKHS, P for provision of MNH services for RHC Keti-Bunder. The contract was meant to supplement RHC services, was confined only to MNH

services, and involved supplementary funds to the NGO to deploy its own staff, supplies and equipment. The contract was between the Pakistan Poverty Alleviation Fund (PPAF) and the AKHS, P with information to the District Health Office. Scope of contract was confined to facility based services and did not involve administrative control over preventive outreach activities. Performance output targets were not specified and payment involved a block grant.

In Chitral, a management contract was in place contracting AKHS, P to firstly manage the RHC Shagram for provision of all services including MNH services and secondly upgrade existing RHC services for provision of CEmONC care. The contract was between the Executive District Health Office and AKHS, P. It involved a transfer of RHC operational costs to the NGO and was supplemented by AKHS, P funds for provision of the additional CEmONC services.

Contractual targets & monitoring:
A formal contract was signed in both cases with payment involving a block grant and was not tied to performance outputs. In Thatta, there were no clear targets set in the contract however the NGO was required to submit monthly and quarterly progress reports, and monitoring and evaluation was to be carried out by a third party. In Chitral, there was list of process and output indicators outlining the range of services to be provided but clear outputs were not set out. A District Health Committee (DHC) was responsible for semi-annual review of performance, target setting was mutually decided in this group and the NGO was also required to send Health Management Information System (HMIS) reports to the Executive Director Officer Health (EDOH). Table 1.1 summarizes information about contractual arrangements in both sites.

Table 1.1: Overview of Contractual Arrangements

Site	Contracting out Partners	Type of Contract	Type of Services	Targets Set	Contract Tenure
Thatta: *RHC Keti-Bunder*	PPAF and AKHS, P	Service Delivery	Routine MNH service & BEmONC	No clear targets set	June 2010 to June 2012, further extended to December, 2013
Chitral: *RHC Shagram*	DoH, KP, District Government Chitral & AKHS, P	Management Contract	All RHC services including routine MNH services, BEmONC and CEmONC	No clear targets set	July 2008 to July 2013

Chapter 2: Methodology

2.1 Inception Workshop

An Inception workshop was held for consultation on objectives, draft design and sampling. Participants included representatives from DoH Sindh and KP, directors of MNCH programs Sindh and KP, District health officers (DHOs) Thatta and Chitral, representatives from the contracted NGO, the AKHS, P, and RAF. Agreement was reached on objectives and design. It was further decided that i) tools will be standardized in accordance with guidelines for BEmONC staffing, inventory and medicines developed by the provincial Maternal Newborn and Child Health (MNCH) program; ii) control sites will be selected by district health officers to as far as possible match Bacillus Calmette Guerin (BCG) vaccination and Lady Health Worker (LHW) coverage status of intervention sites, and iii) a refresher trainings on BEmONC will be organized for MNCH staff of all participating RHCs at the end of project as compensation of their time spent in survey activities.

2.2 Study Sites

Both intervention RHCs are not in typical rural locations of Thatta and Chitral, but are very isolated with the nearest next level facility i.e. District Head Quarter (DHQ) or Taluka Head Quarter (THQ) hospital, 1.5 hours travel away and more in poor weather conditions. The populations served are relatively small; 14004 for Keti-Bunder RHC and 16039 for Shagram RHC as reported by EPI, but these populations are widely dispersed over difficult terrain separated by deep valleys in Shagram Chitral, or sea channels in Keti-Bunder, Thatta, making travel to the RHCs difficult, expensive and time consuming. Only infrequent and expensive public transport is available. In Keti-Bunder, there are some local private medical practitioners who are located closer to many local populations than the RHC whereas in Shagram there are no other health facilities or private medical practitioners in the catchment area. Keeping in mind the aforementioned context, it was attempted to find the closest possible comparable controls (non-intervention RHCs). Intervention to control ratio was 1:2 to increase representation. Two comparable RHCs from Thatta and two from Chitral were selected on the basis of comparable catchment population, percentage of BCG coverage, number of LHWs and geographical location such as proximity to road or town centre (See Table 2.1), after consultation with Executive District Officer Health (EDOH) of each district. Study population was mothers who had delivered in the past six months and were residing in catchment areas of RHCs.

Table 2.1: Information used for selection of control RHC's

S.#	Name of RHC	Catchment Population	BCG Coverage (%)	No. of LHWs	Geographical Location
	Thatta				
1.	RHC Chouhar Jamali (control)	27467	90	12	Partially Remote
2.	RHC Baghan (control)	34148	60	5	Remote
3.	RHC Keti-Bunder (intervention)	14004	83	3	Remote
	Chitral				
1.	RHC Koghuzi (control)	15832	62	18	Partially Remote
2.	RHC Drassan (control)	13998	85	20	Remote
3.	RHC Shagram (intervention)	16039	62	22	Remote

2.3 Study Design

For cross-sectional comparison across intervention (AKHS, P contracted RHCs) and control (non-contracted) RHCs a comprehensive set of methods including Household Survey, Health Facility Assessment; village based Focus Group Discussions with eligible women and husbands, and Provider Cost Analysis were used.

- Household Survey: It included household interviews in catchment areas of contracted out & non-contracted RHCs and assessed service utilization, patient expenditure, health seeking behaviour, household knowledge and practices, and delivery outcomes.
- Health Facility Assessment: Health facilities were assessed for quality of care parameters at contracted out and non-contracted RHCs, and involved facility audit, indent review, direct observation, record review, staff interviews, and exit patient interviews.
- Focus Groups Discussions FGDs): FGDs were conducted to explore clients' health seeking behaviour for a range of MNH services, decision making dynamics with particular emphasis on women's role, and affordability of services.
- Provider Cost Analysis: Analysis of provider costs at contracted out RHCs was conducted through record review to provide cost of per unit of service for provider and proportionate spending by administrative versus service cost.

Linkage between research questions, major areas of research and methods are summarized in Table 2.2.

Table 2.2: Research questions, major research areas and methods

	Areas Explored	Methods
Qs 1,3,4	Population based utilization	**Household Survey** *(catchment area of contracted out and non-contracted RHCs)*
	Patient expenditure	
	Birth outcomes	
	Health seeking practices	
	Equitable distribution of effects	
Qs. 1&2	Structural aspects	**Health Facility Assessment** *(contracted out and non-contracted RHCs)*
	Equipment & commodity availability & functionality	
	Clinical quality of care	
	Facility utilization	
	Patient satisfaction	
Qs.5	Barriers to access, preferences, decision making dynamics	**Focus Group Discussions** *(Catchment area of contracted out and non-contracted RHCs)*
Qs.6	Provider unit costs Administration versus service costs	**Program record review** *(Contracted out RHCs only)*

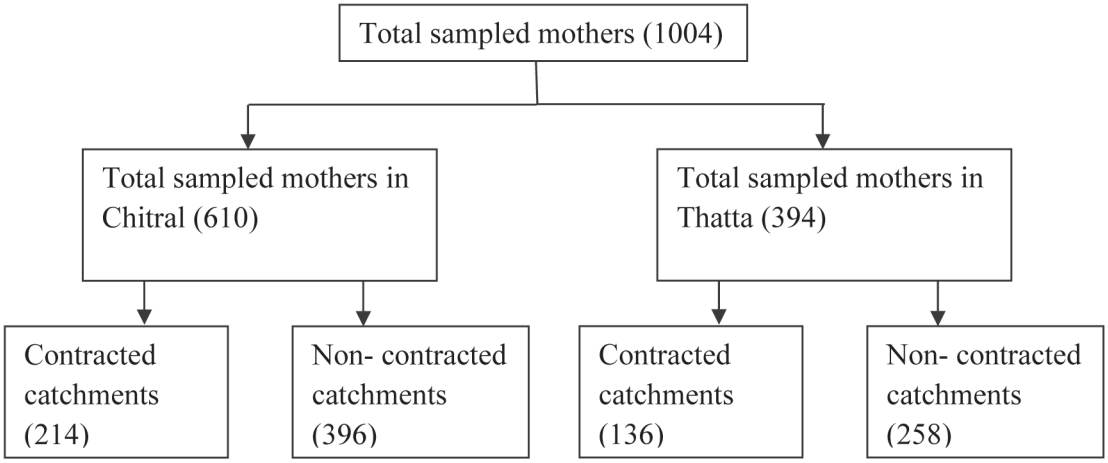
2.4 Study Components

A. Household survey

Subjects: Household interviews in catchment areas of contracted out & non-contracted RHCs were conducted to assess service utilization, patient expenditure, health seeking behaviour, household knowledge and practices, and delivery outcomes. Household socio-demographic, occupational and income related information was also collected. Interviews were conducted with women who had delivered in the last six months.

Sampling: Sample size was calculated on the basis of institutional delivery as an indicator, using data from Pakistan Demographic and Health Survey (PDHS) 2006-07 of 8.2% births in public sector facilities, with ability to detect at least 7 percentage point increase in institutional deliveries (anticipated relative risk of 1.85 or more), 80 per cent power and 5% level of significance with ratio of 1:2 for intervention and controls. The sample size came out to be 774 respondents. We were able to achieve sample size of 1004 respondents comprising 350 in contracted out sites and 654 in non-contracted sites by covering all mothers who delivered in the past six months within the catchment areas of intervention and control RHCs. For further details see (Figure 2.1).

Figure 2.1: Sampling for household survey



The sampling frame comprised list of villages and households provided by EPI staff at each RHC. In Thatta, we visited 85 villages in contracted out and 210 villages in non-contracted clusters. In Chitral, we visited 9 villages in contracted out and 54 villages in non-contracted clusters.

We stratified all the catchment villages into 2 clusters by those ≤5km to RHC (near cluster) and those >5 km for RHC (far cluster). Within each cluster the larger villages were divided into household units of 50 while those having less than 50 households were taken as discrete units. We then randomly sampled household units in both near and far clusters and within each sampled household unit, a household was randomly selected followed by house to house survey for required number of respondents until the required sample size was achieved.

Process of conduction: An intensive three days training workshop was organized to train the field staff in Thatta and Chitral. The training workshop focused on the conceptual clarity of the instrument, field data collection procedures, and management of other aspects of the survey. As part of this training, a one day field pilot testing was also organized for field experience before the start of field activities. Trained data collectors were allocated a set of households on daily basis. Each day the teams gathered at their respective field office and attended the morning meeting being conducted by their supervisor. Each team then went to the field to collect the assigned data. At the community sites, local facilitators were hired for guidance and to introduce teams to the village. The field supervisor was responsible to check the entire filled questionnaire for completeness. Research coordinator was responsible to re-check a random sample of 5% of the total filled questionnaires on daily basis. If any errors and inconsistencies were identified the forms were given back to the data collectors for correction from the field.

B. Health facility assessment

Health facility assessment survey assessed quality of care parameters at two contracted out and four non-contracted RHCs and involved facility audit, exit patient

interviews, staff interviews, and direct observations. The subjects were staff of contracted out and non-contracted RHCs and patients who had sought care.
Service Provision Assessment (SPA) tools[1] were adapted in the context of Health Facility Assessment (HFA). Data collection tools comprised 4 interview forms and 4 observation checklists. National Maternal Neonatal and Child Health (NMNCH) guideline[2] was utilized as a gold standard for conducting health facility assessment.

Facility audit: Facility audit was carried out in all six RHCs. Assessment was conducted to observe physical infrastructure, basic laboratory services, availability of BEmONC signal functions[3], availability of MNH services, quality assurance, availability of drugs, equipment and supplies, assessment of staff training and available HMIS records (FLCF manual[4] was referred for HMIS tools). In addition, utilization of facilities with respect to antenatal visits, post natal visits, sick new-born consultations and total deliveries were also recorded.

Patient exit interviews: Exit interviews were conducted with caretakers of sick newborns visiting health facility, pregnant women availing antenatal care services and delivered mothers. Convenient purposive sampling was employed to enrol patients for exit interviews. Exit interviews with pregnant and delivered women mainly focused on service utilization, maternal and newborn health practices and patient's satisfaction with availed services. Satisfaction with overall Antenatal Care (ANC) consultation was determined by using likert scale (satisfied, partially satisfied and dissatisfied), while satisfaction from delivered mothers was assessed through multiple questions in context of their perceived satisfaction with the availed maternity services at the facility. The reasons why delivered mothers' reported satisfaction and dissatisfaction with the available services was also explored in the context of overall quality of maternity care dimension. On the other hand, interviews with caretakers of sick newborns mainly assessed caretaker's knowledge about prescribed drugs and overall level of satisfaction with the consultation. Interviewed clients for caretakers included 4 from contracted out and 7 from non-contracted facilities, whereas 20 exit interviews with pregnant women were held at contracted out and 40 at non-contracted facilities. Total 8 delivered mothers were interviewed at contracted out and 3 at non-contracted facilities. Exit interviews were not qualitative in nature. On average 10 days were spent in each site for data collection, therefore an attempt was made to interview all eligible clients at RHCs during the specified time frame.

Staff interviews: Interviews were carried out with medical superintendents, medical officers, midwives, nurses, vaccinators and medical technicians available during data collection period at all six RHCs. Interviews were mainly focused on the assessment of staff knowledge (WHO guidelines[5] on

[1] MEASURE/DHS (http://www.measuredhs.com/aboutsurveys/spa/start.cfm)
[2] Minimum Services Delivery Standards (MSDS) for Primary Health Care including mother and child health care. National Maternal, Neonatal and Child Health Program, Sindh. (2010)
[3] Total 8 BEmONC functions are being considered. Six signal functions are prescribed by Women's Commission for Refugee Women and Children on behalf of Reproductive Health Response in Conflict Consortium (RHRC). Two additional functions were recommended by Project Director Provincial MNCH Program, Sindh.
[4] Health Management Information System for First Level care Facilities. Instruction Manual. (2000) Government of Pakistan.
[5] Integrated Management of Pregnancy and Childbirth. WHO (2006). http://www.who.int/maternal_child_adolescent/documents/924159084x/en/index.html

Integrated Management of Pregnancy and Child birth (IMPAC) and Integrated Management of Neonatal and Child illnesses (IMNCI) guideline by World Health Organisation (WHO) and United Nations International Children's Fund (UNICEF) [6] were referred for danger sign assessment) training in maternal and newborn health aspects, supervision and level of level of satisfaction at the facility.

Staff interview was a component of Health Facility Assessment (HFA) which quantitatively assessed the quality of care dimensions. Although few open ended questions were included in staff interview form to explore the reasons for not sending clients to referral care facilities and the areas needing improvement at the facility. Exploring the perception of staff about the contribution of resource sufficiency was outside the scope of staff interviews. Total of 12 staff from contracted out and 24 from non-contracted were interviewed.

Direct observation: It included observation of labour and new born care (guideline for new born care was taken from NMNCH and for further detail of activities WHO essential new born care guideline was referred [7]) post labour and post-natal assessments. Total 5 observations for labour and post-labour were held in contracted out facilities. Convenient purposive sampling was employed to enrol patients for observations. In non-contracted facilities, out of 2 cases observed for labour, 1 post labour assessment was carried out. Only 2 post natal assessments were held; one each in both types of facilities. The observations were carried out to assess the quality of care and provision of required services as prescribed by NMNCH guidelines.

Note:
Due to absence of eligible participants in non-contracted facilities in district Thatta, observations for post labour, post natal and observation during labour and care of new born was not carried out. In Chitral, exit interviews with care takers of sick children and post natal assessment were not executed in both types of facilities, whereas observation during labour and post labour observations were only carried out in contracted out facility in Chitral. The latter was due to preference for home deliveries and lack of required infrastructure for delivery at non-contracted facilities. An attempt was also made to extend the stay of field staff in non-contracted RHCs but it did not capture the observation of delivery cases. Facility audit tool and observation checklist for labour and new born care was specifically reviewed by Provincial Project Director MNCH Program. In addition, all the data collection instruments were reviewed by field expert in obs/gyne and paediatrics (part of HFA team) employed at Aga Khan University and Hospital for suitability of adapting the instruments in local context.

Process of health facility assessment:
Data collection team comprised of three staff members including 1 female medical officer with experience in obstetrics and gynaecology and 2 LHVs/ CHNs for each district. Operational training manual was developed to build participant's understanding mainly on data collection

[6] Integrated Management of Neonate and Childhood Illness. Chart Booklet by WHO and UNICEF.

[7] Essential Newborn care Course. Training File. WHO. http://www.who.int/maternal_child_adolescent/documents/newborncare_course/en/index.html

instruments, scientific conduct of the study, documentation, interviewing and observation skills etc. On an average 10 days were spent in each facility for the purpose of data collection. Prior to data collection at each facility, meeting was held between project coordinator and facility in-charge to gain their cooperation. Adherence to the ethical principles was ensured i.e., written consent was taken from all the study participants prior to interviews and observations. For observations, consent was separately taken from participants and also from the attending staff at the respective facilities. Monitoring of the data collection was carried out by the project coordinator followed by supervisory visits by HFA component lead.

C. Focus group discussions

Selection of FGDs: One set of FGDs were conducted with pregnant women or those who had recently delivered, and another set was conducted with male participants (husbands/ fathers). Both sets of FGDs were conducted at village level. Six FGDs were conducted in catchment population of each participating RHC, giving a total of 36 FGDs with18 FGDs in Chitral and 18 in Thatta. Equal number of villages were randomly selected from near (≤5km) and far clusters (>5km) to have adequate representation of more remote locations. Of the six FGDs conducted in each catchment site, two were with male participants and four with female participants. There were 10-14 participants in each FGD, a total of 161 and 265 participants from contracted out and non-contracted RHCs' catchment sites respectively.

FGD conduction process: For FGDs, data collectors (note takers and moderators) were recruited from the same district with command on local language. Male data collectors conducted FGDs with male participants and female data collectors conducted FGDs with female participants. After taking permission from the community leaders, data collectors identified eligible participants from the villages and invited them for FGDs. FGDs were conducted within the villages at convenient time and place for participants. The moderator was responsible for free flow of discussion and probing where needed; note takers took notes of important verbal and non-verbal communications and gestures. FGDs were tape recorded after taking consent from the participants.. Transcription was carried out on real time basis.

Themes Explored: The FGDs began with exploring health seeking behaviour across the range of MNH services and probing barriers to MNH service utilization. Financial constraints were further probed in terms of willingness to pay across the range of MNH services and financial assistance options. Willingness to Pay (WTP) was explored using a bidding game starting with a minimal amount named by a participant and the amount progressively up-scaled until the maximum amount willing to pay was established within the group. Women's role in decision making was explored for each type of service and circumstances. Discussion was also held on how households mobilize funds when payments were beyond WPT levels and what were the adverse effects on households.

D. Provider cost analysis

Analysis of provider costs at the two contracted out RHCs required a review

of the records for 2011 to obtain service volumes and record inputs in terms of staff, medicines and supplies. This was not restricted to MNH costs but was expanded to include MNCH costs as there was no separation of the number of visits of newborn, infant and children.

Tool applied: The CORE Plus costing tool was used to calculate the standard costs of MNCH services. Developed by Management Sciences for Health (MSH) in Boston to cost services delivered in the community, health posts, basic health centres and comprehensive health centres, has been used in many countries and applied to determine costs for contracting out provision of health services.[8] Permission was taken from MSH to use the CORE Plus tool for the Provider Cost Analysis (PCA).

Information collected (Personnel costs): Staff costs were computed for technical staff including (female medical officer, male medical officer, LHV, midwife, dispenser, technician), as well as support staff. Onsite interviews with technical staff providing MNH services were held to determine the average time spent in providing direct MNH services (e.g. treatment, prescriptions, lab test requisitions, referrals) and on administrative activities (e.g. staff meetings, HMIS report preparation). The amount of time spent by each technical staff on administrative activities related to MNH was allocated based on the percentage of total direct service time each spent in providing direct MNH services. The mid-point of the actual salary range for each cadre at each RHC was used for calculating standard salary costs.

Cost of medicines, medical supplies, laboratory tests and ultrasound supplies: The standard medicine unit costs for all the MNH medicines are based on the median costs of the generic versions of these medicines available in Pakistan and drawn from the Standard Pharm guide Red Book Online. Full trade prices are used from the Pharm guide, any discounts obtained in purchasing large bulk supplies have not been factored in. Vaccine costs were obtained from Central Office of the Expanded Programme of Immunisation (EPI). The unit costs of medical, laboratory test and ultrasound supplies were taken from AKHS,P records. The determination of medicines and medical, laboratory and other clinical supplies costs allocated to MNH services was based on the assumptions for proportion of service volumes and costs mentioned in annexure 1.

Fixed costs: The fixed costs at both RHCs include the administrative activities component of the salaries of technical staff providing MNH services; administrative and support staff salaries, and other operating costs including utilities, stationary, repairs and maintenance, generator fuel and depreciation. The other operating costs were obtained from the trial balances provided by the AKHS, P and other books of accounts of AKHS, P and DHO of the respective districts and other relevant records provided during the onsite visits. The fixed costs allocated to MNH services are based on the percentage of total technical staff Full Time Equivalents (FTEs) at each RHC providing MNH services.

[8] Collins, David, Zina Jarrah, and Prateek Gupta. 2009. Cost and Funding Projections for the Minimum Package of Activities for Health Centres: Ministry Of Health, Royal Government of Cambodia, Arlington, Va., USA: Basic Support for Institutionalizing Child Survival (USAID/BASICS) for the United States Agency for International Development (USAID)

Standard treatment guidelines: Standard treatment guidelines were taken from provincial MNCH Program and involved the services to be conducted at RHC, activities within services, and the required staffing, equipment and commodities. Staff time spent on these activities was then computed through staff interviews.
Further details of method and sources for PCA are given in Annexure 1.

2.5 Data Analysis

Household Survey: Statistical Package for Social Sciences (SPSS) Version 16 was used for household data analysis. Comparative analysis conducted between contracted out and non-contracted areas was assessed using Pearson Chi-square test and results with p-values less than 5% were considered as significant. Fisher's exact test was used in situations where expected count was less than 5% in chi-square test.
For health expenditure data trimmed mean and median were used. Outliers were trimmed by removing 10% data from both ends and inter-quartile range was also reported for cost of each service. The difference in average cost of a service between contracted out and non-contracted areas was assessed using independent samples t-test.

We also used Cox regression to adjust for confounding effect of mother's age, education, distance from RHC and Socio-Economic Status (SES) on utilization of MNH services. Multivariable analysis was performed for both crude and adjusted association. For equity analysis, a SES index was created using Principal Component (PC) analysis. SES index was measured by eighteen variables including variables related to durable asset ownership, access to utilities and infrastructure and housing characteristics. The SES scores obtained by PC analysis were classified into equal groups of terciles and quintiles with tercile I and quintile I being the highest, and tercile III and quintile V being the the lowest SES groups.

Health Facility Assessment: In 2004, Afghanistan pioneered a facility-based Balanced Scorecard (BSC)[9] to measure performance of service capacity and delivery. This Health Facility Assessment (HFA) adapts the Afghanistan scorecard and has five domains (patient satisfaction, staff satisfaction, staff capacity, service provision and health facility functionality) with twenty one indicators (refer Annex 3) extracted from Service Provision Assessment (SPA) tools.

BSC indicators in HFA are presented as a percentage score ranging from 0 to 100. Mean scores on staff knowledge, staffing, drugs, supplies and availability of services have been converted into percentages.
To comparatively rate the contracted out and non-contracted facilities, all the five BSC domains were converted into indices, created from an aggregate set of available performance indicators, and composite scores were calculated based on mean percentages. A scoring system was developed to rate each of the 5 indices where <50% (poor performance) was assigned a score of 1, 50-70% (good performance) a score of 2 and >70% (excellent performance) was scored as 3. Sum of all indices scores was divided by 15 (maximum

[9] Peters D H et al. (2007). A balanced scorecard for health services in Afghanistan. Bulletin of the World Health Organisation;85:146-151

possible score) and multiplied by 100 to get an overall percentage for the contracted out and non-contracted facilities. Finally, an overall composite score has been obtained for the two contracted out and four non-contracted facilities.

Focus Group Discussion: Digital recordings of FGDs were transcribed into Urdu and translated into English for uploading into qualitative data analysis (NVivo software version 10). The QSR NVivo 10.0 software was used for qualitative data analysis so as to provide easy and systematic retrieval of data. Transcripts were coded into tree codes corresponding to the main themes explored and further sub-divided into branch codes using a grounded process and based on issues identified by respondents. The attributes for classification of branch codes in NVivo software were: type of facility i.e. contracted out and non-contracted; district i.e. Thatta and Chitral; and distance from facility i.e. near and far cluster. Finally, themes and sub-themes emerged by organizing branch codes under specific categories. On the basis of themes, investigators made interpretations and arrived at assertions.

Provider Cost Analysis: Data was entered into the CORE Plus costing tool on: standard working days and times; holidays, sick days and training days; volume of MNH services provided, catchment population, type of location (urban, rural, remote rural); number of beds, normative percentage of time technical staff spend on direct MNH service to patients; numbers, type and salary of all MNH service provider staff; the number, type and salary of administrative and support staff, operating costs of the facility-based and community-based MNH services by category including transport, fuel, utilities, repairs and maintenance, printing, stationary and depreciation.

Using this data the CORE Plus tool calculated a total cost for each MNH service based on: volume and standard treatment cost for each MNH service; fixed costs allocated to each MNH service based on the percentage of total direct service time spent. Standard treatment costs were based on STG guidelines for each MNH service specifying the time to be spent by each category of technical staff, the volume and frequency of medicines and medical supplies to be used and the number of investigations (laboratory, ultrasound) to be ordered.

Costs were also calculated for the estimated number of MNH services needed at each RHC versus actual service volume. This was based on expected births taken from PDHS 2006-07 and extrapolated to calculate the number of services required by the catchment population of each RHC, assuming there was full use of the RHC.

2.6 Data Management and Quality Assurance

A number of quality assurance processes were undertaken for data collection and management.

- The technical team comprising of principal investigator, component leads and research Fellow developed the tools, carried out quality assurance visits and frequently reviewed field data collection.
- Data collection was supervised by a research coordinator having

prior experience in field surveys. Separate field teams, supervised by the research coordinator, were constituted for the different study components. A field supervisor managed the Household Survey, a social scientist supervised the FGDs, a female medical officer supervised the HFA, and a senior accountant supervised the PCA.

- Male and female data collectors, FGD moderators and note takers were locally recruited and trained.
- All tools were pre-tested in the month prior to fieldwork and necessary adjustments were made. Tools were translated into local language during the process of field staff training.
- Debriefing sessions were conducted at the end of each day of fieldwork.
- Real time data entry was carried out for all components and ongoing feedback was provided to field teams.
- All forms were checked by component supervisors for completeness and consistency as well as appropriate coding at the end of the day.
- Research coordinator checked a random 5% of the total filled questionnaires on daily basis. If any errors and inconsistencies were identified, the forms were given back to the data collectors for correction from the field.
- Epi databases and entry screens were developed for data entry. Double data entry was performed by independent data entry operators and entry was cross validated through the software. A random check of 5% forms was also done by statistical team to ensure correct entry of the forms.

2.7 Ethical considerations

This study was approved by the Ethical Review Committee (ERC) of Aga Khan University Karachi, and research ethics committee of National Bioethics Committee (NBC), Islamabad, Pakistan. An introductory meeting with the relevant stakeholders including provincial Departments of Health, DHOs, and AKHS, P was conducted to brief them about the study objectives and activities prior to data collection. Permission from village community leaders was obtained before entering the village for fieldwork and from medical officers in charge of sampled health facilities before initiation of facility assessment. Informed consent was taken from each interviewee at village and facility level. Names of respondents were anonymised with a code and all data has been securely and confidentially treated.

Chapter 3: Findings of Household Survey

Socio-demographic Characteristics of Contracted out versus Non-Contracted

The sample across contracted out and non-contracted catchments sites was similar in terms of household density, family size and maternal literacy. Most of the mothers were in age group of 20-34 years in both contracted out (79.1%) and non-contracted (80.2%) sites. However, there was slightly higher participation of women aged above 35 years in contracted out sites with no difference in maternal median age across both sites. There was significantly higher percentage of poor women in the contracted out was than in non-contracted catchments ($p<0.001$). About 45.1% of the participants were in the lowest wealth tercile in contracted out catchments compared to 27.1% in non-contracted.

Comparison of Socio-demographic Characteristics among Mothers in Contracted out vs. Non-contracted Catchments

Variable	Contracted out (n=350)	Non-Contracted (n=654)	*p*-value
Maternal Age	n (%)	n (%)	0.002
< 20 years	4 (1.1)	33 (5.1)	
20-34 years	277 (79.1)	524 (80.2)	
35-49 years	69 (19.7)	96 (14.7)	
Maternal median age (Inter Quartile Range)	28 (25-32)	28 (25-30)	
Family Size			
Mean	9.3 (3.8)	9.0 (3.7)	0.188
Median	9 (6-12)	8 (6-11)	
Household Density			
Mean	5.2 (2.3)	5.4 (2.7)	0.438
Median	4.7 (3.7-6.5)	5 (3.3-7)	
Maternal Education			
No Education	233 (68.7)	451 (71.4)	
Primary	17 (5.0)	36 (5.7)	
Middle	20 (5.9)	35 (5.5)	0.334
Secondary	26 (7.7)	56 (8.9)	
Higher	43 (12.7)	54 (8.5)	
Socio-Economic Status (SES) Terciles			
I	105 (30.0)	229 (35.0)	
II	87 (24.9)	248 (37.9)	< 0.001
III	158 (45.1)	177 (27.1)	

3.1 Choice of Provider for Maternal and Newborn Care Services

Choice of provider for ANC, delivery, PNC, and use of services for newborn illnesses was overall significantly different between contracted out and non-contracted catchments with higher use of RHC for all services in contracted out sites over non-contracted. In non-contracted out, there was instead greater use of private health facilities, home based visits and delivery and other government facilities rather than RHC (Table 3.1). RHC use was significantly higher in contracted out catchments of both districts (Thatta and Chitral) for all types of services except for complicated assisted delivery/ C-section and ANC at least 3 visits where no significant difference was seen for these services in Thatta district. However, there was no significant difference between contracted out and non-contracted sites for population based MNH services utilization from skilled providers. Using Cox regression, adjusted relationship showed no significant association of MNH service utilization with maternal age, maternal literacy, and distance from RHC, and SES status negating any possible confounding effect.

Table 3.1: Choice of provider for ANC, delivery and newborn care in contracted out and non-contracted catchments

		Thatta					Chitral					Overall				
Type of Service	**Catchment**	**Other Govt. HF n(%)**	**RHC n(%)**	**Private HF n(%)**	**Home based visit/ delivery n(%)**	***p*-value**	**Other Govt. HF n(%)**	**RHC n(%)**	**Private HF n(%)**	**Home based visit/ delivery n(%)**	***p*-value**	**Other Govt. HF n(%)**	**RHC n(%)**	**Private HF n(%)**	**Home based visit/ delivery n(%)**	***p*-value**
ANC (at least 1 visit)	Contracted out	11 (8.6)	77 (60.2)	39 (30.5)	1 (0.8)	0.002	14 (9.4)	132 (88.6)	0 (0.0)	3 (2.0)	< 0.001	25 (9.0)	209 (75.5)	39 (14.1)	4 (1.4)	< 0.001
	Non-contracted	57 (23.8)	111 (46.4)	65 (27.2)	6 (2.5)		163 (51.3)	37 (11.6)	106 (33.3)	12 (3.8)		220 (39.5)	148 (26.6)	171 (30.7)	18 (3.2)	
ANC (at least 3 visit)	Contracted out	3 (5.7)	37 (69.8)	13 (24.5)	0 (0.0)	0.094	7 (9.2)	69 (90.8)	0 (0.0)	0 (0.0)	< 0.001	10 (7.8)	106 (82.2)	13 (10.1)	0 (0.0)	< 0.001
	Non-contracted	15 (15.8)	51 (53.7)	29 (30.5)	0 (0.0)		98 (52.4)	28 (15.0)	57 (30.5)	4 (2.1)		113 (40.1)	79 (28.0)	86 (30.5)	4 (1.4)	
Delivery (all types)	Contracted out	8 (5.9)	30 (22.1)	77 (56.6)	21 (15.4)	< 0.001	10 (4.7)	51 (23.8)	24 (11.2)	129 (60.3)	< 0.001	18 (5.1)	81 (23.1)	101 (28.9)	150 (42.9)	< 0.001
	Non-contracted	11 (4.3)	18 (7.0)	126 (48.8)	103 (39.9)		120 (30.3)	12 (3.0)	48 (12.1)	216 (54.5)		131 (20.0)	30 (4.6)	174 (26.6)	319 (48.8)	
Delivery (complicated assisted delivery/ C-section)	Contracted out	4 (22.2)	-	14 (77.8)	-	0.99	5 (13.2)	27 (71.1)	5 (13.2)	1 (2.6)	< 0.001	9 (16.1)	27 (48.2)	19 (33.9)	1 (1.8)	<0.001
	Non-contracted	4 (22.2)		14 (77.8)	-		67 (65.7)	4 (3.9)	26 (25.5)	5 (4.9)		71 (59.2)	4 (3.3)	40 (33.3)	5 (4.2)	
PNC	Contracted out	2 (4.8)	14 (33.3)	24 (57.1)	2 (4.8)	< 0.001	1 (6.7)	3 (20.0)	5 (33.3)	6 (40.0)	< 0.01	3 (5.3)	17 (29.8)	29 (50.9)	8 (14)	< 0.001
	Non-contracted	2 (2.4)	10 (12.0)	71 (85.5)	-		30 (50.0)	5 (8.3)	11 (18.3)	14 (23.3)		32 (22.4)	15 (10.5)	82 (57.3)	14 (9.8)	
Newborn Illness	Contracted out	2 (2.8)	15 (21.1)	47 (66.2)	7 (9.9)	0.04	4 (8.2)	12 (24.5)	10 (20.4)	23 (46.9)	0.003	6 (5.0)	27 (22.5)	57 (47.5)	30 (25.0)	< 0.001
	Non-contracted	8 (7.1)	5 (4.5)	84 (75.0)	15 (13.4)		35 (34.0)	12 (11.7)	22 (21.4)	34 (33.0)		43 (20.0)	17 (7.9)	106 (49.3)	49 (22.8)	

3.2 RHC utilization for MNH services by disadvantaged groups in contracted out and non-contracted catchments

Equity:

We looked at utilization of contracted out and non-contracted RHCs by disadvantaged and less disadvantaged groups. Disadvantaged groups were taken as those who were illiterate, resided at a distance of >5km and low socio-economic status, and utilization assessed for ANC, facility based births and care seeking for newborn illness. A comparison of utilization pattern across contracted out and non-contracted sites showed significant differences across disadvantaged and less disadvantaged groups for the use of facility (RHC) based ANC but no such appreciable difference was seen in the use of facility based deliveries and care seeking for newborn illness. The findings for ANC show a mixed pattern. There was higher percentage of illiterate users of ANC at both sites, however the contracted out site had a significantly higher proportion of literate users as compared to non-contracted ($p<0.001$). Greatest use of contracted out sites for ANC was seen by those in the highest income quintile, while non-contracted sites were more used by those in the middle income bracket ($p<0.001$) (Table 3.2). Differential ANC utilization by distance shows a higher proportion of ANC users at contracted out facilities reside >5 km away as compared to non-contracted where the majority users are within ≤5km ($p<0.01$). The comparative sample for facility (RHC) based births and care seeking for newborn illness was low and did not show appreciable difference.

Table 3.2: RHC service utilization by disadvantaged groups in contracted out and non-contracted catchments

Service Utilization	Contracted out n (%)	Non-contracted n (%)	*p*-value
Antenatal Care at least one visit (n=357)			
Illiterate	134 (64.1)	133 (89.9)	<0.001
Literate	75 (35.9)	15 (10.1)	
Distance > 5km	130 (62.2)	68 (45.9)	<0.01
Distance ≤5 km	79 (37.8)	80 (54.1)	
SES tercile I	88 (42.1)	34 (23)	<0.001
SES tercile II	52 (24.9)	86 (58.1)	
SES tercile III	69 (33.0)	28 (18.9)	
Facility Based Births (n= 111)			
Illiterate	54 (66.7)	25 (83.3)	0.102
Literate	27 (33.3)	5 (16.7)	
Distance > 5km	35 (43.2)	9 (30)	0.275
Distance ≤5 km	46 (56.8)	21 (70)	
SES tercile I	30 (37)	9 (30)	0.409
SES tercile II	24 (29.6)	13 (43.3)	
SES tercile III	27 (33.3)	8 (26.7)	
Care seeking for Newborn illness (n=44)			
Illiterate	18 (66.7)	11(64.7)	0.894
Literate	9 (33.3)	6 (35.3)	
Distance > 5km	11 (40.7)	2 (11.8)	0.050
Distance ≤5 km	16 (59.3)	15 (88.2)	
SES tercile I	12 (44.4)	5 (29.4)	0.459
SES tercile II	6 (22.2)	7 (41.2)	
SES tercile III	9 (33.3)	5 (29.4)	

3.3 Out-of-Pocket Expenditure (OOP)

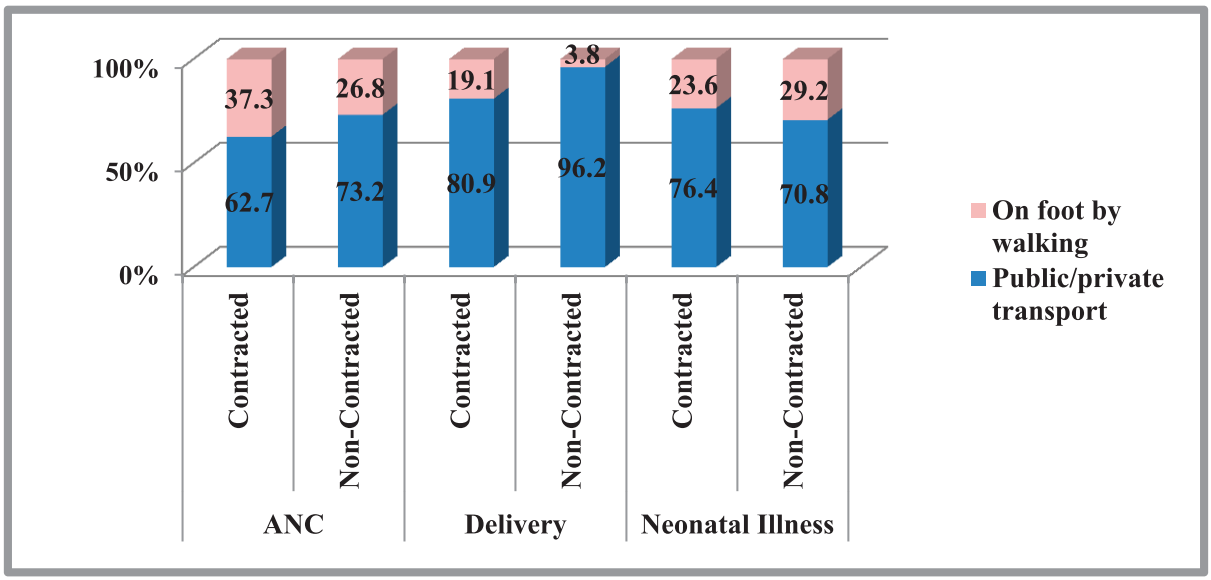
Comparison of OOP expenditure by catchment population on consultation, medicine, tests, transport and attendant's cost is given in Table 3.3. Overall OOP expenditure was significantly higher in contracted out catchments than in non-contracted for tests, transport and attendants cost with no significant difference for consultation and medicine. However, differences appeared within contracted out and non-contracted catchments of Thatta and Chitral. OOP expenditure was significantly higher for transport and attendant's cost in contracted out catchments of Thatta, whereas it was significantly higher for tests; attendant's cost and marginally significant for transport costs in contracted out catchments of Chitral as compared to non-contracted catchments.

Table 3.3: OOP expenditure† (in PKR) by catchment population on consultation, medicine, tests, transport and attendant's cost

	Thatta			Chitral			Overall		
Services	**Contracted out**	**Non-contracted**	***p*-value**	**Contracted out**	**Non-contracted**	***p*-value**	**Contracted out**	**Non-contracted**	***p*-value**
Consultation Mean (SD) Median (IQR)	n=104 1631 (1176) 1650 (500-2300)	n=237 1615 (980) 1450 (1000-2200)	0.9	n=102 1221 (1410) 500 (200-1669)	n=223 1227 (1204) 700 (300-2000)	0.966	n=206 1428 (1310) 1000 (300-2213)	n=460 1427 (1110) 1100 (500-2100)	0.991
Medicine Mean (SD) Median (IQR)	n=106 1036 (456) 1000 (700-1363)	n=209 945 (451) 900 (500-1300)	0.092	n=122 804 (488) 600 (500-1025)	n=248 818 (495) 630 (500-1000)	0.807	n=228 912 (486) 850 (500-1200)	n=457 876 (479) 800 (500-1200)	0.354
Tests Mean (SD) Median (IQR)	n=57 311 (157) 250 (250-250)	n=119 283 (124) 250 (250-250)	0.204	n=127 697 (192) 750 (550-800)	n=217 589 (247) 600 (325-800)	< 0.001	n=184 577 (255) 600 (300-800)	n=336 480 (258) 400 (250-700)	< 0.001
Transport Mean (SD) Median (IQR)	n=78 2345 (1277) 2200 (1275-3275)	n=177 1131 (1082) 700 (400-1400)	< 0.001	n=93 1806 (1201) 1620 (800-2600)	n=237 1532 (1150) 1200 (600-2100)	0.055	n=171 2052 (1262) 2000 (1000-3000)	n=414 1360 (1138) 1000 (500-2000)	< 0.001
Attendant's cost Mean (SD) Median (IQR)	n=82 1332 (780) 1200 (688-2013)	n=181 623 (478) 500 (300-800)	< 0.001	n=76 973 (747) 600 (400-1500)	n=205 772 (605) 600 (300-1155)	0.037	n=192 1159 (783) 1025 (488-1700)	n=268 702 (554) 500 (300-1000)	< 0.001

†OOP expenditure data is trimmed up to 10% from both tails

Figure 3.1: Source of transportation



Source of Transport: Comparison between sources of transportation for ANC, delivery, and neonatal illness are shown in Figure 3.1. Overall use of vehicular transport for ANC and delivery was higher in non-contracted catchments compared to contracted out areas, while more women walked to the facility for care in the contracted out catchments.

3.4 Household OOP Expenditure during Last Pregnancy by Range of MNH Services:

Household total OOP expenditure in contracted out and non-contracted catchments for each type of MNH service with and without transport expense is shown in Table 3.4. Household mean OOP expenditure including transportation expense was significantly higher for ANC, normal delivery, C-section and PNC, in contracted out catchments than in non-contracted. However, after excluding transport expense, OOP expenditure remained significantly higher only for ANC in contracted out catchments than in non-contracted whereas opposite was the case for normal delivery and newborn illness.

Table 3.4: Household OOP expenditure† (in PKR) during last pregnancy by range of MNH services (including and excluding transport expense

	Including transport expenditure			Excluding transport expenditure		
Services	**Contracted out**	**Non-contracted**	***p*-value**	**Contracted out**	**Non-contracted**	***p*-value**
ANC	n=202	n=439		n=221	n=420	
Mean (SD)	1677 (810)	1477 (783)	0.003	1075 (440)	963 (443)	0.002
Median (IQR)	1500 (1094-2313)	1275 (850-2000)		1000 (700-1388)	900 (600-1200)	
Normal Delivery	n=192	n=379		n=211	n=410	
Mean (SD)	4041 (3932)	2845 (3183)	< 0.001	600 (782)	1425 (1186)	< 0.001
Median (IQR)	3025 (1000-6000)	1950 (1000-3125)		100 (0-1000)	1000 (500-2100)	
Assisted Delivery	n=42	n=89		n=43	n=91	
Mean (SD)	8023 (3850)	6545 (4140)	0.054	7129 (4333)	5571 (4016)	0.051
Median (IQR)	7525 (5925-10000)	6000 (3341-8000)		6000 (5000-8400)	5000 (2925-6875)	
C-Section	n=13	n=27		n=13	n=29	
Mean (SD)	33126 (12339)	24422 (12077)	0.046	27212 (9400)	22272 (10892)	0.182
Median (IQR)	29500 (24025-37500)	21500 (14500-30400)		24750 (20013-33000)	20000 (13500-28000)	
PNC	n=113	n=199		n=133	n=222	
Mean (SD)	1696 (1031)	1372 (729)	0.004	697 (414)	703 (399)	0.887
Median (IQR)	1350 (825-2480)	1150 (800-1750)		650 (430-950)	650 (400-963)	
Newborn Illness	n=73	n=151		n=74	n=150	
Mean (SD)	1287 (947)	1308 (942)	0.876	746 (421)	903 (522)	0.017
Median (IQR)	960 (600-1750)	1000 (650-1900)		1000 (300-2213)	1100 (500-2100)	

† OOP expenditure data is trimmed up to 10% from both tails

3.5 Household Total OOP Expenditure (median) by Catchment, SES, and Distance during Last pregnancy

Table 3.5 shows Household total median OOP expenditure on MNH during last pregnancy by catchment and SES. Overall, median OOP expenditure was higher in contracted out catchments in all SES quintiles and irrespective of distance from RHC. Even, when looked at separately between two districts, median OOP expenditure remained higher in contracted out than non-contracted catchments of both Thatta and Chitral irrespective of SES and distance, except for highest SES quintile in Chitral.

Table 3.5: Household total OOP expenditure (median) by catchment and SES during last pregnancy

SES	Thatta				Chitral				Overall			
	Contracted out		Non-contracted		Contracted out		Non-contracted		Contracted out		Non-contracted	
Quintile	N	Median (IQR)	N	Median (IQR)	N	Median (IQR)	N	Median (IQR)	N	Median (IQR)	N	Median (IQR)
I	4	15900 (9180-31550)	9	3000 (1050-26850)	33	6300 (2512-15165)	134	6600 (3150-11590)	42	8105 (2793-19106)	138	6525 (2975-11590)
II	36	5900 (3150-15375)	29	4875 (2337-6287)	37	7570(3062-12130)	78	4475 (2450-11075)	66	6585 (3131-12488)	114	4575 (2412-8712)
III	133	4457 (3050-6665)	24	3500 (1700-5650)	9	4300 (1910-8712)	26	4085 (1297-10937)	33	4400 (2297-6580)	159	3550 (1700-5900)
IV	54	5575 (2075-8437)	32	3725 (2037-7337)	41	5900 (1437-11022)	44	3600 (1500-9237)	73	5700 (1545-10190)	98	3700 (1840-7637)
V	28	12075 (4537-15300)	34	5075(2800-8975)	46	4575 (1552-8840)	56	3700(1700-10812)	80	6562(2025-13037)	84	4195 (2262-10225)
Distance												
> 5 km	123	7275 (4352-13075)	68	4080 (2050-6000)	111	5850 (2200-11275)	183	5200 (2500-10750)	179	6175 (2875-12210)	306	4450 (2200-8606)
≤ 5 km	132	5100 (1655-13100)	60	3915 (1700-6712)	55	6400 (1500-9950)	155	4650 (2000-11200)	115	6150 (1570-11300)	287	4300 (1950-8350)

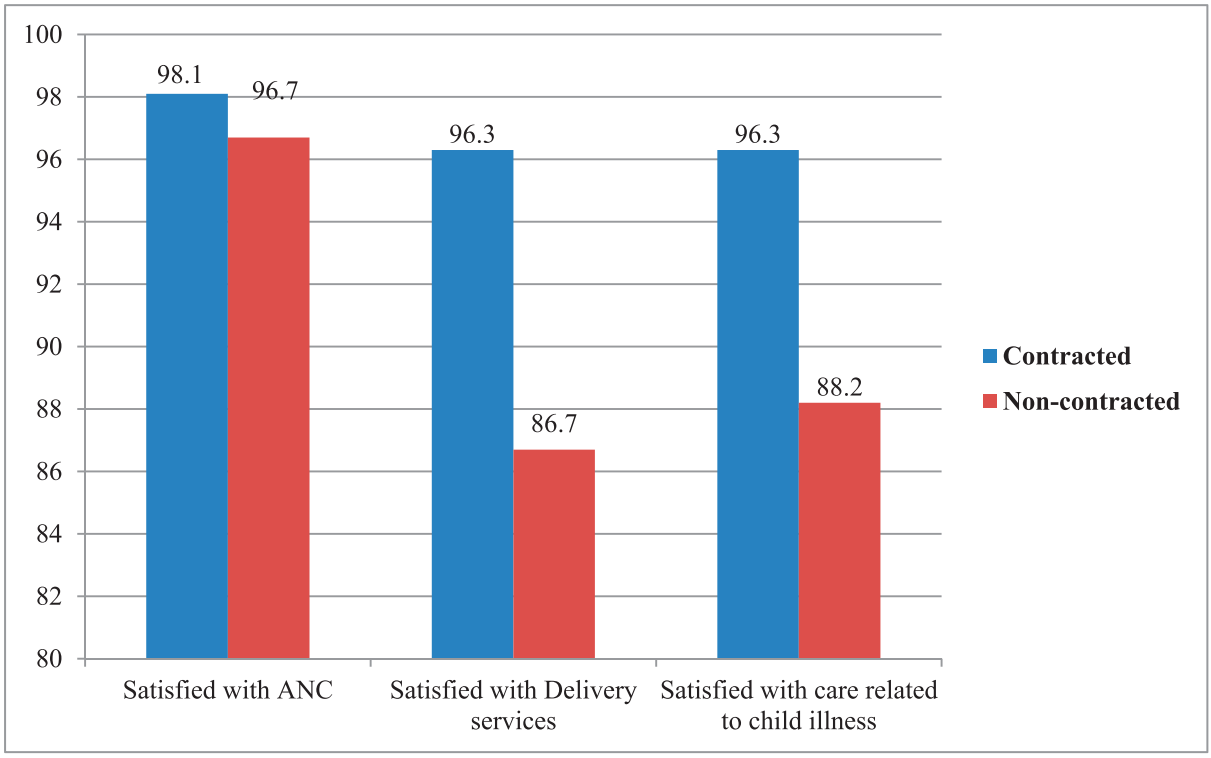
3.6 Quality of Maternal and Newborn Care

Quality of maternal and newborn care services received by those utilizing services from any provider in contracted out and non-contracted catchments is shown in Table 3.6. There was no difference between overall contracted out and non-contracted catchments in terms of maternal care indicators such as percentage of women; who took iron tablets, received TT immunisation during prenatal care and were counselled for child spacing. However, there was significantly higher percentage of women who took iron tables, and were counselled for child spacing in contracted out catchments of Thatta. There was no significant difference in percentage of women receiving two or more TT injections during last pregnancy between contracted out and non-contracted catchments of Thatta and Chitral. For newborn care, there were a higher number of newborns weighed at birth and women counselled for BCG immunisation and management of infant diarrhoea in contracted out catchments. However, percentage of newborns weighed at birth and given Vitamin A supplementation; and percentage of mothers counselled for exclusive breast feeding, BCG immunisation and management of infant diarrhoea was significantly higher in contracted out than in non-contracted catchment of Thatta with no difference in Chitral. BCG immunisation was higher in contracted out site compared to non-contracted in Chitral but there was no difference between contracted out and non-contracted sites in Thatta.

Table 3.6: Quality of maternal and newborn care by any provider in contracted out vs. non- contracted catchments

	Thatta			Chitral			Overall		
Variables	**Contracted out (n=136)**	**Non-Contracted (n=258)**	***p*-value**	**Contracted out (n=214)**	**Non-Contracted (n=396)**	***p*-value**	**Contracted out (n=350)**	**Non-Contracted (n=650)**	***p*-value**
Maternal Care	n (%)	n (%)		n (%)	n (%)		n (%)	n (%)	
Took iron tablets or syrup	104 (76.5)	141 (54.7)	<0.001	137 (64.0)	290 (73.2)	0.018	241 (68.9)	431 (65.9)	0.343
Percentage of women receiving two or more TT injections during last pregnancy	89 (65.4)	161 (62.6)	0.584	153 (71.5)	302 (76.3)	0.197	242 (69.1)	463 (70.9)	0.561
Counselled for Child spacing	81 (59.6)	123 (47.7)	0.025	96 (44.9)	169 (43.1)	0.679	177 (50.6)	292 (44.9)	0.088
Newborn Care									
Immunized for BCG at birth	71 (54.2)	103 (45.0)	0.092	183 (87.6)	294 (77.0)	0.002	61 (75.3)	20 (71.4)	0.685
Newborns weighed at birth	59 (44.4)	36 (15.6)	< 0.001	61 (29.2)	105 (27.3)	0.73	120 (37.6)	141 (24.4)	<0.001
Vitamin A supplementation in the last 6 months	5 (3.7)	1 (0.4)	0.027	27 (12.6)	49 (12.4)	0.931	32 (9.2)	50 (7.9)	0.51
Counselled for Exclusive Breast feeding	78 (57.4)	109 (42.2)	0.004	112 (52.3)	215 (54.8)	0.553	190 (54.3)	324 (49.8)	0.18
Counselled for BCG immunisation	95 (69.9)	104 (40.3)	<0.001	100 (46.7)	194 (49.5)	0.516	195 (55.7)	298 (45.8)	0.003
Counselled for management of Infant diarrhoea	35 (25.7)	28 (10.9)	<0.001	65 (30.4)	117 (29.8)	0.892	100 (28.6)	145 (22.3)	0.028
Counselled for signs of pneumonia	14 (10.3)	13 (5.0)	0.05	62 (29.0)	115 (29.3)	0.925	76 (21.7)	128 (19.7)	0.449

Figure 3.2: Patient satisfaction about MNH services offered by contracted out vs. non-contracted RHCs



Patient satisfaction about MNH services offered by contracted out vs. non-contracted RHCs: There was no major difference in percentage of patients satisfied with pregnancy care provided at both types of RHCs. For delivery services and newborn illness, percentage of patients satisfied was higher in contracted out RHCs than in non-contracted
(see Figure 3.2).

3.7 Household Knowledge and Practices for MNH

Knowledge and practices related to MNH care in both contracted out and non-contracted catchments are shown in Table 3.7. Significantly higher percentage of clients in contracted out catchments, particularly in Chitral were aware about at least one danger sign during pregnancy and newborn illness compared to non-contracted catchments, but there was no difference in Thatta for awareness about pregnancy related danger signs. Similarly, there was significantly higher percentage of clients in contracted out than in non-contracted catchments of Chitral practicing safe for cord handling involving safe cutting and tying of cord at the time of child birth, while reverse was the case for Thatta. Breastfeeding practices were also better in contacted catchments and use of prelacteal feeds was less in contracted out sites of Chitral. However, there was no significant difference in percentage of women aware about ORS preparation.

Table 3.7: Knowledge and Practices related to MNH care in contracted out vs. non-contracted catchments across district Thatta and Chitral

MNH Practices	Thatta			Chitral			Overall		
	Contracted out (n=136)	Non-Contracted (n=258)	*p*-value	Contracted out (n=214)	Non-Contracted (n=396)	*p*-value	Contracted out (n=350)	Non-Contracted (n=654)	*p*-value
	n (%)	n (%)		n (%)	n (%)		n (%)	n (%)	
Women awareness about at least one danger sign in pregnancy	108 (79.4)	184 (71.3)	0.081	122 (57.0)	180 (45.5)	<0.01	230 (65.7)	364 (55.7)	<0.01
Women awareness about at least one danger sign of newborn illness	94 (69.1)	159 (61.6)	0.003	175 (81.8)	290 (73.2)	0.046	269 (76.9)	449 (68.7)	0.294
Safe Practices for cord handling	91 (67.9)	187 (81.7)	<0.01	179 (85.6)	278 (72.2)	<0.001	270 (78.7)	465 (75.7)	0.294
Percentage who started breast feeding within 1 hour of birth	75 (60.5)	90 (39.8)	<0.001	84 (40.6)	103 (27.1)	0.001	159 (48.0)	193 (31.8)	< 0.001
Percentage who were given colostrum	108 (87.8)	216 (93.9)	0.046	196 (93.8)	334 (87.0)	0.010	304 (91.6)	550 (89.6)	0.324
Percentage who were given prelacteal feed	42 (33.1)	52 (22.6)	0.032	47 (22.5)	154 (40.0)	<0.001	89 (26.5)	206 (33.5)	0.026
Aware about ORS preparation	39 (28.7)	67 (28.9)	0.967	31 (14.6)	62 (15.9)	0.689	70 (20.1)	129 (20.7)	0.827

Chapter 4: Health Facility Assessment (HFA)

The objective of HFA was to measure the quality of care and utilization of MNH services across contracted out and non-contracted RHCs in districts Thatta and Chitral. A multidimensional interpretation of quality of care was undertaken, taking into account end user's satisfaction, staff capacity and satisfaction, service provision with respect to MNH service delivery and health facility functionality.

4.1 Findings

BSC Domain Patient Satisfaction

Patient satisfaction domain includes patient's (pregnant women) inclination for facility based delivery and overall patient satisfaction in contracted out and non-contracted facilities in districts Thatta and Chitral.

Patient's inclination for facility based delivery was reported to be higher in contracted out facilities. Despite the observed difference in patients' inclination for facility based delivery, overall patient satisfaction with antenatal care services was rated high in both types of facilities. Non-contracted facilities in Thatta report relatively low patient satisfaction. In general, both types of facilities in Chitral reflected high patient satisfaction.

Table 4.1: Patient Satisfaction

S.#	Indicators	Thatta		Chitral		Overall	
		Contracted out (n=10)	Non contracted (n=20)	Contracted out (n=10)	Non-contracted (n=20)	Contracted out (n=20)	Non-contracted (n=40)
1.	Patient's inclination for facility based delivery	70%	45%	90%	40%	80%	43%
2.	Overall patient satisfaction	100%	74%	100%	100%	100%	87%

Note: Overall percentages mentioned in all tables have been calculated from SPSS.

4.2 BSC Domain Staff Satisfaction

BSC domain 2 compares staff satisfaction across both types of facilities. It is observed that staff of contracted out facilities' reported high satisfaction with supervision and over-all work environment.

Table 4.2: Staff Satisfaction

S.#	Indicators	Thatta		Chitral		Overall	
		Contracted out (n=3)	Non-contracted (n=11)	Contracted out (n=9)	Non-contracted (n=13)	Contracted out (n=12)	Non-contracted (n=24)
1.	Staff satisfaction with supervisory visits*	100%	25%	100%	86%	100%	53%
2.	Staff satisfaction with facility work environment	67%	46%	100%	92%	92%	71%

*Satisfaction with supervision is assessed from the staff which received supervisory visits.

Staff satisfaction is rated high across both types of facilities in district Chitral as compared to Thatta. In Chitral's contracted out facility staff was 100% satisfied with supervisory visits and facility work environment.

4.3 BSC Domain Staff Capacity

Table 4.3 compares staff capacity for service provision and knowledge with regard to maternal and newborn health service delivery. Relatively more staff (especially in Chitral) of contracted out facilities has received in-service training in MNH aspects as compared to non-contracted facilities. Staff capacity building in newborn health aspects needs improvement in all types of facilities.

WHO recommends at least 64 danger signs related to antenatal, intra-partum, post-partum and newborn period that staff should know. In this regard knowledge scores were reported to be poor in both types of facilities; however staff belonging to contracted out facilities (especially Chitral) had relatively better knowledge about danger signs.

Vaginal bleeding/ discharge and increased diastolic blood pressure were the most commonly known signs during the antenatal period. For intra-partum period, obstructed labour and increased diastolic blood pressure were the commonly reported danger signs. For post-partum period, increased bleeding and non-contracted uterus were among the commonly known signs. Most commonly reported danger signs during the newborn period were lethargy and inability to drink or breastfeed.

Table 4.3: Staff Capacity

S.#	Indicators	Thatta		Chitral		Overall	
		Contracted out (n=3)	Non-contracted (n=11)	Contracted out (n=9)	Non-contracted (n=13)	Contracted out (n=12)	Non-contracted (n=24)
1.	Staff training in maternal health	67%	88%	100%	86%	91%	87 %
2.	Staff receiving training in newborn health	67%	25%	75%	71%	73%	47 %
3.	Staff knowledge score *	23%	20%	30%	25%	28%	22%

Note: *The mean number of danger signs out of a standard list (64) has been converted in to percentages.

4.4 BSC Domain Service Provision

Table 4.4 compares contracted out and non-contracted facilities in the context of provision of maternal and newborn health services. Overall, contracted out facilities demonstrated better service provision in comparison with non-contracted facilities.

Even though staff of contracted out facility in Chitral fared slightly better, staff's communication to mothers about antenatal, postnatal, new born danger signs and appropriate breastfeeding showed poor knowledge score across both types of facilities across both districts. It is noted that appropriate ANC physical assessment (blood pressure, assessment for anaemia, abdominal examination) was reported to be low in both types of facilities [10-11] .

In general, contracted out facility in Chitral reflected better service provision with regards to communication to mothers about appropriate breastfeeding, TT vaccine, ultrasound and laboratory tests as compared to other facilities.

[10]National Institute for Health and Clinical Excellence. Quick Reference Guide. Antenatal Care. Routine care for the healthy pregnant woman (2008)

[11]Bates B. A Guide to Physical Examination. (1983) 3rd Edition. Lippincott

Table 4.4: Service Provision

S.#	Indicators	Thatta		Chitral		Overall	
		Contracted out (n=3)	Non-contracted (n=11)	Contracted out (n=9)	Non contracted (n=13)	Contracted out (n=12)	Non-contracted (n=24)
1.	*Communication to mothers about newborn danger signs	11%	17%	19%	17%	18%	15%
2.	*Communication to mothers about antenatal & post-partum danger signs	26%	26%	30%	27%	30%	26%
3.	Communication to mothers about appropriate breastfeeding	0%	0%	63%	33%	50%	20%
		(n=10)	(n=20)	(n=10)	(n=20)	(n=20)	(n=40)
4.	Women prescribed folate	80%	65%	60%	32%	70%	47%
5.	[1]Women advised TT vaccine , ultrasound [2] and lab tests[3] as appropriate	60%	67%	93%	70%	77%	69%
6.	Women provided appropriate antenatal physical assessment	10%	5%	30%	30%	20%	18%

*The mean number of danger signs communicated out of a standard list has been converted in to percentages

1. Mean percentage for TT vaccine, ultrasound and lab tests advised to mothers.

2. Advice for ultrasound to ANC women is in accordance with National Institute for Health and Clinical Excellence (NICE), Quick Reference Guide for Antenatal Care.

3. Basic lab investigations during antenatal period as prescribed by National Maternal, Neonatal and Child Health Program (NMNCH) guidelines.

4.5 BSC Domain Health Facility Functionality

Table 4.5 shows the comparison of Health Facility (HF) functionality across contracted out and non-contracted facilities. In accordance with NMNCH guidelines, it is noted that contracted out facilities were found to be well equipped with availability of required drug categories, supplies and equipment, laboratory services, BEmONC signal functions and HMIS records as compared to non-contracted facilities. Contracted out facility in district Chitral was the one most appropriately staffed (Refer Table 4.6).

Table 4.5: Health Facility Functionality

S.#	Indicators	Thatta		Chitral		Overall	
		Contracted out (n=1)	Non-contracted (n=2)	Contracted out (n=1)	Non-contracted (n=2)	Contracted out (n=2)	Non Contracted (n=4)
1.	*Appropriate staffing	32%	65%	77%	50%	55%	58%
2.	*Appropriate drugs	86%	86%	100%	66%	95%	77%
3.	*Appropriate supplies and equipment	63%	59%	85%	61%	74%	60%
4.	*Availability of services (lab services and BEmONC signal functions[4])	45%	48%	96%	25%	70%	36%
5.	Availability of any waste disposal mechanism	100%	0%	100%	100%	100%	50%
6.	*Available HMIS records	77%	63%	80%	73%	80%	67%
7.	Availability of any service delivery guidelines	100%	0%	100%	100%	100%	50%

*Appropriateness is judged with reference to the requirement prescribed in the NMNCH guidelines.

Mean scores obtained on these variables have been converted into percentages.

4. Total 8 BEmONC signal functions are being considered. Six signal functions are prescribed by Women's Commission for Refugee Women and Children on behalf of Reproductive Health Response in Conflict Consortium (RHRC). Two additional functions were recommended by Project Director Provincial MNCH Program, Sindh.

A total of twenty two essential drugs categories were assessed. Contracted out facilities had more drug categories available as compared to non-contracted facilities. It must be noted that contracted out facility in Chitral had all the required drug categories. Unavailable drug categories in non-contracted facilities included anti-convulsants, iron supplements, anti-spasmodic, contraceptives, laxatives and anti-depressants. It must be noted that there were five expired categories of drugs in non-contracted facilities (especially in Chitral) as compared to contracted out facilities where none of the medicines was expired. These were: (i) anti-allergic (ii) anti-asthmatic (iii) anti-emetic (iv)

anaesthetic and (v) EPI vaccines (polio and TT). Out of the eleven basic lab services and eight BEmONC signal functions more services were reported from contracted out facility in Chitral. Laboratory tests which were not available in non-contracted facilities of Chitral included, urine DR, stool DR, blood grouping, malarial parasite smear test, blood screening and matching and blood sugar test. On the other hand, it was noted in district Thatta that blood screening and matching for transfusion and blood screening for Hepatitis B and C were not available. Amongst BEmONC signal functions, services for manual removal of placenta, removal of retained products of placenta and assisted vaginal delivery were absent from non-contracted facilities in district Thatta. Similar functions were also found to be lacking from non-contracted facilities in Chitral. Parenteral oxytocin and hypertensives were additionally not found in the latter.

It is noted that presence of waste disposal mechanism was in place across all types of facilities except non-contracted facilities in Thatta. Burning and dumping of waste products was the commonly used waste disposal mechanism in district Chitral, whereas collection of waste in colour coded bags followed by burning was reported from contracted out facility in Thatta.

In general availability of HMIS tools was relatively high in contracted out facilities as compared to non-contracted facilities. OPD register, attendance register, daily expense register, daily EPI and permanent register and immunisation record card were among the commonly available tools.

It is appreciable to note that contracted out facility in district Chitral did well on all aspects of health facility functionality as compared to other facilities.

Table 4.6: Availability of service delivery staff in contracted out and non-contracted facilities in districts Thatta and Chitral (Mean)

		Thatta		Chitral		Overall	
S.#	Cadres	Contracted out	Non-contracted	Contracted out	Non-contracted	Contracted out	Non-contracted
1	Medical Superintendent	1	1	2	1	1.5	1
2	Male Medical Officer	1	5.5	1	0	1	2.75
3	Women Medical officers	0	2.5	0	0	0	1.25
4	Gynaecologist	0	0	1	0	0	0
5	Paediatrician	0	0	0	0	0	0
6	Nurse	1	1.5	1	0	1	0.75
7	Lady Health Visitor	0	1	4	1.5	2	1.25
8	Medical technician	0	0	3	3	1.5	1.5
9	Lab technician	0	1	1	1	0.5	1
10	Dispenser	2	2	0	2.5	1	2.25
11	Midwife	1	0.5	0	0	0.5	0.25
12	Driver	0	0.5	2	2	1	1.25
13	Dais	1	0.5	4	1	2.5	0.75
14	Housekeeping staff	1	1	2	2.5	1.5	1.75
15	Security staff	2	3	3	1	2.5	2
	Total	10	20	24	15.5	16.5	17.75

Availability of appropriate staff for service delivery (at least 31) was assessed in fifteen cadres according to NMNCH guideline

Table 4.7 compares the performance of contracted out and non-contracted facilities through composite scores against all the 5 indices derived from the BSC domains.

Based on scoring criteria performance of contracted out facilities has been observed to be better in three out of five domains i.e., patient satisfaction, staff satisfaction and health facility functionality in comparison with non-contracted facilities. In addition, both types of facilities demonstrated similar performance with respect to staff capacity and service provision. Staff capacity was rated good across both types of facilities, with contracted out facilities scoring slightly on the higher side. On the other hand, service provision remained poor in both types of facilities, however, contracted out facilities were rated relatively on the higher side.

Based on overall composite scores and grading criteria the performance of contracted out facilities can be rated as "excellent' whereas the performance of non-contracted facilities was "good".

Table 4.7: Comparison of contracted out and non-contracted facilities across balanced scorecard domains

BSC Domains	Contracted out Facilities	Non-contracted Facilities
A. Patient satisfaction Index	(n=20)	(n=40)
1. Patient's inclination for facility based delivery	80%	43%
2. Overall patient satisfaction	100%	87%
Total score	**90%**	**65%**
Composite score	**3** (excellent)	**2** (good)
B. Staff satisfaction Index	(n=12)	(n=24)
3. Staff satisfaction with supervisory visits	100%	53%
4. Staff satisfaction with facility work environment	92%	71%
Total score	**96%**	**62%**
Composite score	**3** (excellent)	**2** (good)
C. Staff capacity Index	(n=12)	(n=24)
5. Staff receiving training in maternal health	91%	87%
6. Staff receiving training in newborn health	73%	47%
7. Staff knowledge score	28%	22%
Total score	64%	52%
Composite score	**2** (good)	**2**(good)
D. Service provision Index	(n=12)	(n=24)
8. Communication to mothers about newborn danger signs	18%	15%
9. Communication to mothers about ANC & post-partum danger signs	30%	26%
10. Communication to mothers about appropriate breastfeeding	50%	20%

	(n=20)	(n=40)
11. Women prescribed folate	70%	47%
12. Women advised TT vaccine , ultrasound and lab tests as appropriate	77%	69%
13. Women provided appropriate ANC physical assessment	20%	18%
Total score	**44%**	**33%**
Composite score	**1** (poor)	**1** (poor)
E. Health facility functionality Index	(n=2)	(n=4)
14. Appropriate staffing	55%	58%
15. Available drugs	95%	77%
16. Available supplies and equipment	74%	60%
17. Availability of services (lab services and BEmONC signal functions)	70%	36%
18. Availability of any waste disposal mechanism	100%	50%
19. Available HMIS records	80%	67%
20. Availability of any service delivery guidelines	100%	50%
Total score	**82%**	**57%**
Composite score	**3**	**2**
Overall score	**80%**	**60%**
Overall composite score	**3** (excellent)	**2** (good)

Note:
Key for grading system
< 50%=1 (poor performance)
50-70% =2 (good performance)
>70%=3 (excellent performance)

Chapter 5: Client Dynamics for Health Seeking

This section provides a comparison of qualitative findings between areas served by contracted out and non-contracted RHCs.

WOMEN'S AUTONOMY FOR UTILIZING HEALTH SERVICES

5.1 Decision Making for Health Service Utilization

Similar opinions were revealed in regard to household decision making and women's autonomy for access to healthcare services in both contracted out and non-contracted RHCs' catchments. Comparatively more participants from Chitral as compared to Thatta (both catchments served by contracted out and non-contracted RHCs) reported that women are autonomous to seek healthcare. Both male and female participants agreed that the husband being head of the household and responsible for earning and keeping money usually has the major stake in decision making regarding utilization of health care facility for MNH services. Mothers occasionally took decision to utilize the facility in case of newborn emergency but not in case of maternal care. Participants also mentioned that father in law and mother in law being elder decide when husband is not available at home. Sometimes wife and husband or other family members discuss mutually, but final decision making authority is mostly with the husband. Respondents did not report any influence of religious leaders, tribal elders or landlords in household decision making. Women's authority for participating in decision making was mainly limited to household chores.
One of the male participants said:

> *I have money therefore I decide myself and wife is dependent on husband. If wife decides, she doesn't have money, how can she go. If woman is doing any job, then she can decide about herself and baby* (FGD #32, P7).

5.2 Women's Mobility for Health Facility Utilization

Majority of both male and female participants narrated that women cannot go alone to RHC or any other health facility without being accompanied by husband or a male family member. Due to risk of complications on the way to health facility, women cannot go alone and there is need for chaperon. As stated by a participant:

> *Woman can't go alone. When delivery time is near she may deliver in middle of the way or her condition may get worse* (FGD #31, P9).

Long distance to health facility was another reason for not letting women go alone. Respondents in areas further away from the health facility raised distance as a major concern compared to those living closer to facility. A smaller number of participants cited cultural restrictions of "Pardah". One of the female participants said:

> *I can neither go during pregnancy or delivery and nor after delivery; I can't go alone anywhere because my husband doesn't give me permission, always keeps me in veil* (FGD #19, P7).

Consequences could be grave for non-compliance as one of the male participants verbalized:

> *Women of our area can be divorced for going alone* (FGD #26, P6).

Control over finances and education was linked by respondents to women's autonomy. Women who had a source of earning and contributed financially to the household were reported to be more autonomous. One of the male participants narrated:

> *I have money therefore I decide myself and wife is dependent on husband. If wife decides, she doesn't have money, how can she go. If woman is doing any job, then she can decide about herself and baby* (FGD #32, P7).

One of the female participants stated:

> *Women who are doing jobs can go alone* (FGD #5, P2).

Educated women were felt to have greater freedom of movement:

> *Educated females can go alone because they have got knowledge* (FGD #20, P2).

CHOICE OF PROVIDER

5.3 Choice of RHC versus other Providers

Most participants from near clusters of contracted out RHCs in both districts (Thatta and Chitral) responded that they seek care from RHC. However, majority respondents from far clusters in contracted out RHCs and both (far and near) clusters of non-contracted RHCs mentioned that they prefer private healthcare (formal and informal). Those who lived in far clusters of contracted out catchment areas reported that formidable distances prevented them from seeking care with any formal provider, this was particularly reported from Chitral. In catchment population of non-contracted RHCs respondents largely preferred private health providers, including formal and informal providers. For minor ailments healthcare was sought from informal providers whereas for emergency conditions and complications, formal healthcare providers were preferred.

5.4 Choice of Provider for Specific MNH Services:

Most participants, across both contracted out and non-contracted sites and irrespective of distance from RHC, preferred to seek from health care facility but have delivery at home. In non-contracted out areas the dai (traditional birth attendant) was the preferred provider. Respondents reported using the RHC only for vaccination during pregnancy and preferred private health providers for ANC check-up. One of the participants said:

> *We don't go to RHC but go to private hospital for check-up but delivery (child birth) we mostly conduct in home, because our Dai is expert and conducts delivery smoothly* (FGD #7, P1).

In contracted out sites there were mixed responses about use of the contracted out RHC. Some respondents preferred to visit the RHC for ANC and child birth while

others preferred private services. According to one of the participants:

> *I always go to RHC Shagram for pregnancy care and delivery because of quality care and good doctors* (FGD #33, P2).

Respondents from both catchments served by contracted out and non-contracted RHCs reported that they either do not seek postnatal care unless there is any emergency and prefer instead to consult the LHW.

BARRIERS TO UTILIZATION

Participants from non–contracted sites mentioned supply side issues as relatively more important with financial barriers, difficult physical access and cultural issues as lesser barriers.

At contracted out sites, financial barriers were more salient followed by physical access while supply side was comparatively least important.

5.5 Healthcare Supply Side Issues

A number of concerns were reported related to supply side issues in non-contracted sites. Participants from non-contracted sites raised concern that basic maternal and newborn healthcare services are unavailable in RHCs, there are unnecessary delays due to non-availability of medicines in RHCs and doctors do not pay attention to patient. These were repetitive accounts of participants as stated by a participant,

> *No facilities are available over here, neither medicines are available nor doctor pays attention. We returned back (from RHC) after long waiting because nobody paid attention* (FGD #13, P7).

Some participants also felt that services were of poor quality, treatment was ineffective (no relief of ailment), and health providers were inexperienced. Healthcare providers of RHCs were perceived to be involved in private practice, therefore, they were often unavailable in RHCs and doctors were reported to influence clients to seek care from their private clinics. Respondents complained of shortage of medicines and there was a perception that medicines supplied were sold in the market or private clinics of the staff.

> *Everything is supplied to RHC but they sell for money, don't give to poor. Medicines and milk for babies are also supplied but they don't give to anyone* (FGD #17, P4).

Respondents from catchment population of contracted out RHCs had lesser supply side constraints with the RHCs. Most of the participants believed that services were functional and of reasonable quality but wanted a wider range of services. Respondents from both Thatta and Chitral complained of lack of accommodation facilities at the RHCs for attendants. In Thatta, respondents complained of lack of emergency care services while in Chitral concerns were raised at lack of staff for newborn illness. Presence of a system of advance booking for check-ups was also found to be irksome.

> *They behave well in RHC Shagram but they don't allow staying with patient. People, who accompany*

patient, face problems (FGD #32, P12).

5.6 Financial Barriers to Use of MNH Services at RHC

Financial barriers were reported in both contracted out and non-contracted sites but considerably more by respondents in contracted out sites. Participants from non-contracted sites frequently reported expenditure on transport. Expenditure on medicines purchased from private retail outlets due to shortfall of medicines at RHCs was also often reported.. Patients were often forced to bypass the RHC and seek care further on but this came at a higher transport cost.

> *Treatment in RHC is not good and fare of transport is too high and they prescribe medicines but we have to purchase with money* (FGD #11, P11).
> *Money is no problem. Facilities are not available at RHC that's why we are seeking care from Booni on more expenses. We can save our 50% money at RHC Drassan if facilities will be available there* (FGD #23, P5).

Participants from contracted out sites complained of high OOP expenditure on transport, which was both scarce and expensive due to the difficult terrain. There were also concerns of user charges for consultation, diagnostics, delivery (child birth), and newborn illness, and the common perception was that services at government facilities should come free of charge. One of the participants narrated:

> *In RHC Shagram, they charge 175 rupees for one X-rays where as one film of X-rays is of 42 rupees here. Registration fee in government hospital is 5 rupees whereas in RHC Shagram it is 75 rupees. They charge high there so we prefer Dai (traditional birth attendant)* (FGD #32, P2).

The combination of high transportation expenses and user charges were considered to be a formidable barrier for the poorer families.

5.7 Difficult Physical Access

Difficult physical access to healthcare facility for MNH service utilization was a common constraint reported by participants particularly from contracted out catchments. A number of issues were reported contributing to poor physical access, including lack of transportation, poor condition of roads, long distance from RHC and bad weather conditions such as rains and snowfall.

> *We don't get vehicle. When it rains, donkey carts move but no vehicle goes. Then for 5-6 days, there is no space for travelling of vehicle due to stagnant water of rain* (FGD #16, P11).

5.8 Cultural and Traditional Constraints

Respondents of both contracted out and non-contracted facility catchments cited similar cultural and traditional constraints that delayed or prevented health facility use.
For newborn care: Use of traditional home remedies was common in case of newborn illnesses and families turned to RHC only if those remedies were not effective. One of the participants verbalized

In our home, for newborn first we use home remedies, if these are not fruitful then we take baby to RHC keti-Bunder (FGD #1, P1).

For child birth: Mother in laws' experience of child birth influenced practices at birth in some cases.

For PNC: Majority of respondents were unaware of the importance of PNC visit and tended not to seek care unless there was a complication.

Non-availability of female providers: Another barrier to not using non-contracted RHCs for maternal and newborn healthcare was non-availability of female doctor and therefore they prefer traditional birth attendant or LHV. One of the male participants stated:

I don't take my wife to RHC Koghuzi during child birth because there is no lady doctor (FGD #28, P3).

Table 5.1: Perceived barriers to MNH service utilization by rural population: A Comparison between catchments served by contracted out and non-contracted RHC

Catchments served by Contracted out RHCs	Catchments served by Non-contracted RHCs
Healthcare supply side constraints: • Lack of accommodation for attendant • System of advance booking • Lack of emergency care and specialist doctors ***Financial barriers:*** • OOP expenditure for medicines • OOP expenditure for transport • OOP expenditure for healthcare services • Poverty ***Difficult physical access:*** • Poor roads • Long distance • Bad weather conditions • Lack of transportation facility ***Cultural and traditional constraints:*** • Knowledge & behaviour • Alternative remedies • Influence of family members for not seeking care	***Healthcare supply side constraints:*** • Poor quality of services • Short functional hours • Inappropriate case management • Influence of public providers to use private services • Public providers in private practice • Non availability of healthcare services • In-experienced health providers • Delay in provision of healthcare • Poor ambience of healthcare facility ***Financial barriers:*** • OOP expenditure for medicines • OOP expenditure for transport • OOP expenditure for Healthcare services • Poverty ***Difficult physical access:*** • Poor roads • Long distance • Bad weather conditions • Lack of transportation facility • ***Cultural and traditional constraints:*** • Non-availability of female healthcare provider • Knowledge & behaviour • Alternative remedies • Influence of family members for not seeking care

Perceptions of Affordability

Participants from both catchments served by contracted out and non-contracted RHCs expressed highest Willingness to Pay (WTP) for C-Section and assisted childbirth. WTP was less for preventive services such as ANC, PNC and well-baby clinic visits. WTP was least for contraception and child immunisation. The majority mentioned that they do not use contraception and would, anyway, get it free of cost from LHWs hence were unwilling to pay. For child immunisation, majority of respondents cited that it is available free of cost and reported that they get immunisation free of cost and it should remain as it is. Most respondents were willing to pay 50% of the total expense in private market for MNH services, if full range of services incurred were provided in the RHC and if quality services were available.

> *Because we are citizens of Pakistan therefore we are ready to pay up to 50 per cent (of expense) in RHC and we are paying too but we should be provided free facilities for healthcare* (FGD #31, P6).

There was higher WTP for all services in contracted out sites, with the exception of immunisation and contraception for which respondents at both contracted out and non-contracted sites were equally unwilling to pay. WTP was higher in far clusters as compared to near clusters of contracted out RHCs. WTP was higher in Chitral for most of the services as compared to Thatta.

Table 5.2: Willingness to pay (in PKR) for MNH services: A comparison between catchments served by contracted out and non-contracted RHCs

Type of services	Overall	Contracted out	Non-contracted
ANC (per visit)	Most ranged between 50-550 but went as high as 1200 and as low as 50	Most ranged between 50-400 but went as high as 500 and as low as 50	Most ranged between 50-550 but went as high as 1200 and as low as 50
PNC (per visit)	Most ranged between 25-600 but went as high as 1000 and as low as 25	Most ranged between 25-500 but went as high as 1000 and as low as 25	Most ranged between 50-600 but went as high as 1000 and as low as 50
Normal child birth	Most ranged between 500-3000 but went as high as 5000 and as low as 200	Most ranged between 500-2500 but went as high as 3000 and as low as 200	Most ranged between 500-3000 but went as high as 5000 and as low as 500
Assisted child birth	Most ranged between 500-4000 but went as high as 5000 and as low as 500	Most ranged between 500-4000 but went as high as 5000 and as low as 500	Most ranged between 600-5000 but went as high as 5000 and as low as 600
C-Section	Most ranged between 2000-10000 but went as high as 20000 and as low as 1500	Most ranged between 2000-10000 but went as high as 15000 and as low as 2000	Most ranged between 2000-15000 but went as high as 20000 and as low as 1500
Well baby clinic visit	Most ranged between 50-500 but went as high as 500 and as low as 50	Most ranged between 100-500 but went as high as 500 and as low as 50	Most ranged between 50-500 but went as high as 500 and as low as 50
Newborn in-patient	Most ranged between 100-1500 but went as high as 7000 and as low as 50	Most ranged between 200-1500 but went as high as 7000 and as low as 200	Most ranged between 100-1500 but went as high as 3000 and as low as 50
Contraception and child immunisation	Most said they don't use contraception, and immunisation should be free of cost	Most said they don't use contraception, and immunisation should be free of cost	Most said they don't use contraception, and immunisation should be free of cost

Coping Mechanisms to Meet Oop Expenditure

Respondents expressed that in case of inability to pay for MNH, they seek support from institutions and organisations working in their area and also from village people. Furthermore, they consider borrowings and selling household assets as another option, when family earning/savings are exhausted or there is significant shortfall.

> *When there is an emergency for mother or new born then I take loan or pay from earnings of job or arrange money by selling some asset e.g. animals etc.* (FGD #31, P14).

In order to return borrowed money, they curtail monthly routine expenditure by skipping meals and reducing recreational activities. Sometimes, further loans are taken to payback the borrowed money. Few participants mentioned that (contracted out) RHC provide financial help in the form of waiving or subsidizing bill of healthcare services depending on affordability of users.

> *They (RHC) help for very poor people for example reducing fee etc. and mostly give free treatment during child birth* (FGD #36, P2).

If they cannot manage by any means, then they compromise "deprive themselves from healthcare". State of compromise on health may be either not seeking care at all, or seeking care from local providers (formal or informal) who may not be expert to manage the condition at the community level. Compromising healthcare for MNH was also perceived risky as matter of "life and death". One of the participants narrated:

> *My sister in law was about to deliver and we didn't have the money to take her to hospital so baby died inside womb* (FGD #16, P13).

Chapter 6: Provider Cost Analysis (PCA)

Provider Cost Analysis (PCA) presents unit costs for a range of MNH services for contracted RHCs (Annexure 4).These include (BEmONC) services provided by the (RHC) at Keti-Bunder, Sindh, and (CEmONC) services provided by the government RHC at Shagram, KPK. MNH service needs of the catchment population for each RHC and the standard costs of meeting these needs have also been calculated using the latest PDHS (2007) for demographic, incidence and prevalence estimates for rural populations.

6.1 Staffing Levels and Costs

As indicated in the Methodology section, the indicative standard times were developed with the technical staff as the times needed to enable provision of quality MNH services. These standard times were entered into the CORE Plus tool to calculate MNH minimum staffing levels and costs. But as with all standards, they are not achievable all of the time. Hence the staffing levels and costs per service calculated by the CORE Plus tool were higher than those which are practically achievable. Where the CORE Plus tool has been used, it is usual to have a workshop with provincial and national experts in MNH service delivery to develop the standard times for all component tasks of each MNH service.

Keti-Bunder RHC staffing levels and costs: 1.0 FTE of a midwife is available for providing ante and post-natal services to women and performing normal deliveries. This is insufficient for the 2011 workload as 1.79 FTE midwives are needed based on the indicative time specifications in the (STGs). Likewise, the 1.0 FTE staff nurse is not sufficient for the 2011 workload as 1.51 FTE is needed based on the STG specifications (see Table 6.1).
If the projected number of MNH services to be needed by the Keti-Bunder RHC catchment population were to be provided by the RHC in accordance with the indicative times in the STGs, then 0.16 FTE medical officer, 4.6 FTE midwives, 5.5 FTE staff nurses, 0.77 FTE dispenser and 0.11 vaccinator would be required (see Table 1). The volume of services would have increased sufficiently to justify a laboratory technician which would reduce some of the midwife and staff nurse FTE requirements as they are currently only able to do very basic laboratory tests.

Table 6.1: Keti-Bunder actual technical staff FTEs; standard minimum FTEs for 2011 workload; standard minimum FTEs to meet total projected number of MNH services needed

	2011 MNH Staff FTEs	Minimum Standard FTEs for 2011 MNH services	Minimum Standard FTEs for projected services with increased volume
TECHNICAL STAFF			
Medical Officer	0.10	0.04	0.16
Staff Nurse	1.00	1.51	4.58
Midwife	1.00	1.79	5.49
Dispenser	0.50	0.33	0.77
Vaccinator	0.40	0.03	0.11
Total Technical Staff	3.0	3.7	11.11

When the number of MNH services provided is increased to meet the projected needs of the total catchment population, the 2011 standard technical salary cost per service is reduced (see Table 6.2). This is because the average number of services per staff hour increases by an average of 25% from 0.12 to 0.15 with the increased volume of services making more cost effective use of the technical staff. It would be useful to have RHC staffing standards for MNH services that ranges for each type of staff (e.g. 1-2 woman medical officers, 1-2 LHWs, 1-2 staff nurses, 1-2 dispensers). This would allow for staffing flexibility based on size of the catchment population, the projected volume of MNH services needed and the level of MNH services required (e.g. BEmONC or CEmONC).

There is a significant difference between the number of MNH services provided in 2011 and the projected number of services needed. As national rather than local data was available to estimate MNH services needed by the catchment population, these projections may not reflect the actual total need for MNH services by the catchment population. However, this data does suggest that there are barriers to accessing needed MNH services at Keti-Bunder RHC.

Table 6.2: Keti-Bunder number of services and the standard salary cost per service for technical staff for each MNH service provided based on the 2011 volume of MNH services; and based on the projected volume of MNH services needed

MNH SERVICES	No. of Services Provided in 2011	Standard Technical Salary Cost Per Service	Projected No. of Services needed	Standard Technical Salary Cost per needed Service
Antenatal Care	892	544	1968	468
Normal Delivery	108	2,879	492	2,473
Postnatal Care	123	417	200	360
Newborn Care*	108	633	492	450
Community PNC	141	294	292	252

* Includes BCG & first Polio vaccinations

Shagram RHC staffing levels and costs: The staffing level for obstetrician, staff nurse/anaesthetist, laboratory technician and dispenser available for MNH services are sufficient for the 2011 workload based on the STG time specifications. Medical officer and vaccinator time available for MNH services needs to be increased marginally (see Table 6.3).

Table 6.3: Shagram RHC actual technical staff FTEs; standard minimum FTEs for 2011 workload; standard minimum FTEs to meet projected services with increased volume

TECHNICAL STAFF	2011 MNH Staff FTEs	Minimum Standard FTEs for 2011 MNH services	Minimum Standard FTEs for projected services with increased volume
Medical Officer	0.04	0.06	0.14
Lady Health Visitor	3.00	1.67	4.35
Staff Nurse/Anaesthetist	2.00	1.62	4.05
Dispenser	0.68	0.31	0.92
Obstetrician	1.00	0.81	2.32
Lab Technician	1.43	0.51	1.36
Vaccinator	0.03	0.05	0.12
Total Technical Staff	8.18	5.03	13.26

When the number of MNH services provided is increased to meet the projected needs of the total catchment population, the 2011 standard technical salary cost per service is reduced (see Table 6.4). This is because the average number of services per staff hour increases by an average of 44% from 0.09 to 0.13 with the increased volume of services making more cost effective use of the technical staff. As noted earlier, it would be useful to have RHC staffing standards for MNH services that were ranges for each type of staff which allows for staffing flexibility based on size of the catchment population, the projected volume of MNH services needed and the level of MNH services required (e.g. BEmONC or CEmONC).

The severity of the case mix at Shagram RHC is higher than the norm for less remote rural RHCs, particularly as C-Section and assisted deliveries are provided. This is understandable where travel times are so long, transport is so difficult and expensive and other care providers are not available. Treating higher acuity care patients requires higher cost levels of care and increased staff skill mix and time.

There is a significant difference between the current number of MNH services provided and the projected number of services needed. As noted previously, national rather than local data was available to estimate MNH services needed by the catchment population, so these projections may not reflect the actual total need for MNH services by the catchment population. However, this data does suggest that there are barriers to accessing needed MNH services at Shagram RHC.

Table 6.4: Shagram RHC number of services and the standard salary cost per service for technical staff for each MNH service provided based on the current volume of MNH services; and based on the projected increased volume of MNH services needed

MNH Services	No. of Services Provided in 2011	Standard Technical Salary Cost per Service	Projected No. of Services needed	Standard Technical Salary Cost per Needed Service
Antenatal Care*	824	1,461	2,254	1,441
Normal Delivery	210	4,890	437	4,824
Postnatal Care	48	864	564	853
Newborn Care*	226	1,785	564	1,086
Assisted Delivery	10	5,497	42	5,495
Caesarean Section	6	5,399	85	5,354

* Includes BCG & first Polio vaccinations

6.2 Medicines and Medical, Laboratory and Ultrasound Supplies Utilization and Costs

The standard unit costs for medicines and medical, laboratory and ultrasound supplies are the same for Keti-Bunder RHC and Shagram RHC, as these are based on the median price of generic medicines available in Pakistan (Pharmaguide Red Book), and on the same price for clinical supplies purchased by AKHS, P. The standard medicines and supplies cost for each MNH service is also the same because the STGs are the same for both RHCs (see Table 6.5). There are differences in the utilization of medicines and some supplies by the RHCs.

Table 6.5: Standard costs per service for medicines and medical, laboratory and ultrasound supplies for each MNH service provided

MNH Services	Medicines & Clinical Supplies Standard Cost Per Service
Antenatal Care	353
Normal Delivery	615
Postnatal Care	223
Newborn Care*	157
Community PNC	223
Assisted Delivery	649
Caesarean Section	2,542

* Includes BCG & first Polio vaccinations

6.3 Fixed Costs

Keti-Bunder RHC fixed costs:
Standard fixed costs are 48% of total costs at Keti-Bunder RHC, which is relatively high. This is a direct result of the relatively low volumes of care provided, a dilemma faced by health facilities in remote rural locations. The Keti-Bunder RHC midwife and staff nurse provide post-natal care visits in the community which incurs fixed costs that comprise 4% of the total costs. When the number of MNH services provided is increased to meet the projected needs of the total catchment population, the standard fixed costs per service are significantly reduced (Table 6.6).

Table 6.6: Keti-Bunder RHC number of services and standard fixed costs per service for each MNH service provided based on the 2011 volume of MNH services; and based on the projected increased volume of MNH services needed

MNH Services	No. of Services Provided in 2011	Standard Fixed Cost per Service	Projected No. of Services Needed	Standard Fixed Cost per Needed Service
Antenatal care	892	718	1968	331
Normal Delivery	108	3,783	492	1,743
Postnatal Care	123	552	200	254
Newborn Care*	108	661	492	305
Community PNC	141	1,280	292	618

* Includes BCG & first Polio vaccinations

Shagram RHC fixed costs: Standard fixed costs are 48% of total costs at Shagram RHC, which is relatively high. This is a direct result of the relatively low volumes of care provided, a dilemma faced by health facilities in remote rural locations. When the number of MNH services provided is increased to meet the projected needs of the total catchment population, the standard fixed costs per service are significantly reduced (see Table 6.7).

Table 6.7: Shagram RHC number of services and standard fixed costs per service for each MNH service provided based on the 2011 volume of MNH services; and based on the projected increased volume of MNH services needed

MNH Services	No. of Services Provided in 2011	Standard Fixed Cost per Service	Projected No. of Services Needed	Standard Fixed Cost per Needed Service
Antenatal Care	824	2,100	2,254	881
Normal Delivery	210	7,263	437	3,047
Postnatal Care	48	1,265	564	531
Newborn Care*	226	1,591	564	667
Assisted Delivery	10	8,255	42	3,463
Caesarean Section	6	7,830	85	3,285

* Includes BCG & first Polio vaccinations

6.4 Total Costs

When the number of MNH services provided is increased from the current level to meet the projected needs of the total catchment population, the proportion of each component of total standard costs changes. Technical staff salary costs and medicines and medical, laboratory and ultrasound supplies costs as percentages of total costs increase because these costs are directly related to the increased volume of MNH services through the STGs. Administration and support staff salaries decrease as percentages of total costs because these costs are only indirectly affected by the increased volume. Other operating costs also decrease as percentages of total costs because these are fixed costs.

Keti-Bunder RHC total costs: Table 6.8 gives a breakdown of the total standard costs and the percentage of total costs at Keti-Bunder RHC for all MNH services provided based on the 2011 volume of MNH services; and based on the projected volume of MNH services needed.

Table 6.8: Breakdown the total standard costs for Keti-Bunder RHC

Breakdown of Total Standard Cost	2011 Standard Costs	Standard Costs for Projected Needed Services
Salaries (Technical Staff)	1,693,560	3,131,400
% of salaries (technical staff) cost to total cost	*39.4%*	*45.9%*
Salaries (Admin and Support Staff)	1,116,142	1,478,302
% of Salaries (admin & support staff) cost to total cost	*26%*	*21.7%*
Medicines & Medical, Laboratory & Ultrasound Supplies	456,944	1,183,979
% of cost of medicines & medical, laboratory & ultrasound supplies to total cost	*10.6%*	*17.3%*
Other Operating Costs	1,034,440	1,034,440
% of other operating costs to total cost	*23.4%*	*15.1%*
Total standard cost:	**4,301,086**	**6,828,121**

The standard total cost per service combines all the above components. As the volume of MNH services provided is increased to meet the projected level of need, the standard total cost per service is reduced. This is because the administration and Support staff salaries and other operating costs per service are reduced as a proportion of total costs from 49.4% to 36.8%, whereas the technical staff salaries costs per service are reduced and medicines and medical, laboratory and ultrasound supplies costs per service stay the same. These PKR total costs per service figures are converted into the USD equivalent in Table 6.9.

Table 6.9: Keti-Bunder RHC standard total cost per service based on the 2011 volume of MNH services; and based on the projected volume of MNH services needed

MNH SERVICES	No. of Services Provided in 2011	Standard Total Cost per Service**	Projected No. of Services Needed	Standard Total Cost per Needed Service**
Antenatal Care	892	1,615 (US$ 18.78)	1968	1,152 (US$ 13.39)
Normal Delivery	108	7,278 (US$ 84.61)	492	4,832 (US$ 56.17)
Postnatal Care	123	1,192 (US$ 13.86)	200	837 (US$ 9.73)
Newborn Care*	108	1,450 (US$ 16.86)	492	911 (US$ 10.59)
Community PNC	141	1,797 (US$ 20.89)	292	1,093 (US$ 12.71)

* Includes BCG & first Polio vaccinations
**1US$ = PKR 86.02 (average rate for Year 2011)

Shagram RHC Total Costs: Table 6.10 gives a breakdown the total standard costs and the percentage of total costs at Shagram RHC for all MNH services provided based on the 2011 volume of MNH services; and based on the projected volume of MNH services needed.

Table 6.10: Breakdown the total standard costs for Shagram RHC

Break-down of Total Standard Costs	2011 Standard Costs	Needed Standard Costs for Projected Services
Salaries (Technical Staff)	3,356,571	7,767,387
% of salaries (technical staff) cost to total cost	*45.6%*	*55.8%*
Salaries (Admin and Support Staff)	2,194,892	3,305,996
% of Salaries (admin & support staff) cost to total cost	*29.8%*	*23.8%*
Medicines & Medical, Laboratory & Ultrasound supplies	487,516	1,521,555
% of Cost of medicines & medical, lab& ultrasound supplies to total cost	*6.6%*	*10.9%*
Other Operating Costs	1,324,249	1,324,249
% of other operating costs to total cost	*18%*	*9.5%*
TOTAL STANDARD COST :	**7,363,228**	**13,919,187**

The standard total cost per service combines all the above components. As the volume of MNH services provided is increased to meet the projected level of need, the standard total cost per service is reduced. This is because the administration and support staff salaries and other operating costs per service are reduced as a proportion of total costs from 47.8% to 33.3%, whereas the technical staff salaries costs per service are reduced and medicines and medical, laboratory and ultrasound supplies costs per service stay the same. These PKR total cost per service figures are converted into the USD equivalent in Table 11.

Table 11: Shagram RHC standard total cost per service based on the 2011 volume of MNH services; and based on the projected volume of MNH services needed.

MNH SERVICES	No. of Services Provided in 2011	Standard Total Cost Per Service**	Projected No. of Services Needed	Standard Total Cost per Needed Service**
Antenatal care	824	3,914 (US$ 45.50)	2,254	2,674 (US$ 31.09)
Normal Delivery	210	12,768 (US$ 148.43)	437	8,486 (US$ 98.65)
Postnatal Care	48	2,352 (US$ 27.34)	564	1,607 (US$ 18.68)
Newborn Care**	226	3,533 (US$ 41.07)	564	1,910 (US$ 22.20)
Assisted Delivery	10	14,402 (US$ 167.43)	42	9,608 (US$ 100.07)
Caesarean section	6	15,771 (US$ 183.34)	85	11,181 (US$ 129.98)

* Includes BCG & first Polio vaccinations
**1US$ = PKR 86.02 (average rate for Year 2011)

Chapter 7: Discussion and Policy Implications

DISCUSSION

Contracting out initiatives have expanded in Pakistan and in other developing countries. While these have resulted in general increased service utilization (Liu 2008; Loevinsohn & Harding 2005) there is lack of conclusive quality evidence whether they result in improvement in MNH services (Zaidi, et al. 2012, Lagarde & Palmer 2009). There is need for rigorous case studies to fill data gaps.

In this study we took a comprehensive look at performance of contracting out on MNH services. The contextual setting is of contracted out government facilities in remote rural settings. We compared RHCs having contractual arrangements with NGO to RHCs routinely managed by government. The study is based on a comprehensive evaluation moving beyond facility assessment to assessment of population based utilization, coverage of promotive care in the community, underlying client dynamics and provider cost assessment.

Contracted out RHCs served more remote locations, the catchment population was significantly poorer than of non-contracted RHCs, but the populations were otherwise comparable in terms of education, culture and parity. The more disadvantaged status of RHCs having contractual arrangements needs to be kept in mind when interpreting the findings.

Can contracted out RHCs increase access? There was significantly higher utilization of contracted out RHCs as compared to non-contracted RHCs for a range of MNH services including ANC, delivery, PNC and newborn care.

There were differences between the contracted out RHCs. Emergency care access improved only in the contracted out RHC in Chitral equipped for both CEmONC and BEmONC services. The contracted out RHC in Thatta only showed improvement in routine maternity and newborn care access, but this did not extend to BEmONC services for which it remained underequipped.

In the non-contracted sites, clients had lower RHC use and preferred to deliver at home, or those who could afford would use private providers and government Taluka and District hospitals.

While we conclusively see a greater utilization of contracted out RHCs, however higher RHC utilization was insufficient to translate into a significantly higher overall population coverage rate for the contracted out catchments. This importantly shows that contracting out can increase access to obstetric and newborn emergency care but by itself is insufficient to increase access to the full range of MNH services and requires other supportive measures.

Who benefits from increased access? We took a closer look at the distribution of benefits of contracting out. There was significant difference of RHC utilization for ANC by disadvantaged groups between contracted out and non-contracted sites, however sample was low to provide conclusive results for facility based delivery, PNC, and care seeking for newborn illness. Use of RHC for ANC was regressively distributed towards literate mothers and those in the higher wealth tercile of contracted out compared to non-contracted site. There was significantly higher utilization of contracted out RHCs for ANC by those living in far cluster compared to non-contracted RHCs.

This may be due to the more remote location of the contracted out site with a greater proportion of population scattered over the periphery, and may be less related to equity aspects. Hence *in such remote rural settings,* the advantage of RHC contracting out is not reaching to those in more need, and requires extra measures targeting those who are less educated and poorer.

Do contracted out RHCs have better quality of care? Health facility assessment confirms better functionality of contracted out RHCs as compared to non-contracted RHCs, in terms of drugs, equipment and diagnostic facilities, and staff satisfaction and supervision, however there is little difference between contracted out and non-contracted RHCs in terms of technical process of care, staff capacities and patient satisfaction. Staff supervision and satisfaction implied better management but this needs to be accompanied by better training of staff. Patient at contracted out RHCs were better satisfied with services received but less satisfied with charges. Amongst the contracted out RHCs, the infrastructure, staffing and range of services was better in the contracted out RHC in Chitral while in Thatta the contracting out had brought the non-functional RHC to the level of other functional RHCs by equipping it to the level of basic MNH services.

Does contracting out bring down patient expenditure? As there is little information from contracting out studies on whether it has any impact on patient OOP expenditure this area was extensively probed in this study. The increased access due to contracting out also results in patient OOP expenditure for which safety nets need to be provided.

Patient expense, as driven by diagnostics, transport and attendants costs, is higher than that incurred in non-contracted sites but probably lower than what patients might have incurred in the case of non-functional services where they had to go to longer distances to procure care.

On adjustment of transport, patients actually incur lesser expense than non-contracted sites on delivery and newborn illness, similar expense for C-Section and complicated delivery but higher charges for ANC due to user charges for accompanying diagnostics Diagnostic cost was higher in Chitral where the contracted out RHC had an expanded set of investigations to accompany CEmONC services, placed at the request of the District government. As the RHC budget was insufficient to cover for the added investigations, these were covered in part by user charges and in part borne by the contracted NGO. This calls for re-looking at the package for CEmONC services and budget sufficiency to prevent shifting of added expense to patients.

Transport cost was higher in Thatta forcing clients to forego going to the health facility as supported from qualitative data and seen in higher rates of delivery. High transportation expense in Thatta and foregoing of care in Chitral argues the case for transport support in remote Taluka/ Tehsils.

Can community pay for services? Community WTP is highest for obstetric and newborn emergencies and lowest for promotive care such as routine pregnancy visits and well-baby check-ups across all sites. WTP for all services is slightly higher in contracted out sites as compared to non-

contracted sites and probably linked to better quality of care. However, actual expenditure in contracted out sites far exceeds the Willingness to Pay on all MNH services except for newborn illness while excessive spending is restricted to fewer services in case of non-contracted sites. Expenditure buffering mechanisms are required for emergency and routine care while in addition incentivisation is required for promotive care such as ANC, PNC and well-baby check-up.

Clients lack means for coping with emergency expenses and are vulnerable to savings depletion and debt. This then leads to a cut-down on essential household budget including food spending. There is lack of institutional support for *Zakat* at RHC level, absence of community savings schemes or other social safety nets.

Clients' preferences on service utilization: Decision making for health care in both contracted out and non-contracted areas continues to be dominated by males and is influenced by affordability and issues around ease of access. Economic autonomy of women enhanced their participation in decision making especially for newborn care with less translation for maternal care as women being pregnant relied on spouse or relative's support. Both clients and spouses generally preferred to deliver at home but sought ANC check-up from health facility while further use of facility usually depended on need for emergency care. Physical access at both contracted out sites was the main barrier to utilization, while in non-contracted sites poorly functioning health facilities was the foremost barrier with financial barriers and physical access being more secondary factors.

Promotive care in the community: There were mixed results in terms of household knowledge and practices. There was no difference in BCG, TT immunisation across contracted out and non-contracted catchment areas. Gaps in outreach services were particularly seen for Thatta where contracting out was limited to facility based services. However, knowledge of danger signs during pregnancy and newborn illness; and promotive care including safe practices for cord handling and breast feeding was better in contracted out catchments of Chitral than in Thatta probably due to administrative control over outreach.

Standard service provision costs and needed costs: The service cost, as per MNH standards for RHC, was significantly higher for contracted out RHC in Chitral as compared to contracted out RHC Thatta and is directly related to the different skill mix for the various levels of MNCH services they provided (BEmONC vs. CEmONC). In both contracted out RHCs the standard fixed costs were 48-49% (depreciation, administrative costs) with remainder comprising operational costs (technical services including salaries, commodities etc.). The costs met with the WTP of clients for emergency care but exceeded the WTP for routine pregnancy and newborn care, and hence cannot be transferred fully on patients. There is lack of comparable data as there has been no previous costing of MNH services in the government sector. We have comparable figures on expense in private sector by rural disadvantaged clients. The cost per service of C-section is lower than expenditure incurred in private sector by rural clients (Zaidi & Bhutta, 2009); however cost of ANC, PNC, newborn care and delivery is higher than expense incurred

at private sector. This is due to less than expected utilization of contracted out RHC due to remoteness of the catchment area and needs further incentivisation of RHC utilization in addition to contracting out. It is also due to higher acuity of cases coming to the RHC, again due to remoteness of the catchment area, with less acute cases being provided for at home. The cost per service would drop significantly (when the overall utilization of MNCH service provider staff would be increase. This would be reflected in reduction in standard fixed costs by 25-30%).

Added Value of this study: We documented an increase in utilization rates of contracted out RHCs across a range of key MNH services. In comparison, other studies on the contracting out of government health facilities have shown increase in ANC (World Bank 2005; Danel & LaForgia 2005), increase in delivery is seen in one study (Bloom 2005), and there is no documented impact on emergency care and newborn care. A different modality of contracting out involving the contracting of individual GPs and specialists has resulted in conclusive increase in delivery but does not translate to pregnancy (Bhat 2009; Baqui 2009), which involves a different modality of contracting out, has resulted in increase in delivery. In our study setting, there were no other interventions in the intervention and control areas during this time and hence the results can be attributed to contracting out. This is the first study that establishes a link with distance to health facility as this aspect has been under-explored in other studies, and shows that contracting out does not benefit those residing farther to the health facility. Our findings showed no improvement in access to contracted out RHCs by low income groups and similar finding are seen from studies in Guatemala, Cambodia and Bangladesh.
There were mixed findings on technical quality of care as there was improvement in facility functionality but not all aspects of technical process. Quality of care in other contracting out studies also shows that it can result in improvement in some but not all aspects of quality. Quality aspects that are improved vary across contracting out initiatives as a result of contractual incentives and monitoring.

There is a dearth of evidence on changes in patient OOP as a result of contracting out. The one study which assesses OOP is suggestive of reduction in contracted out areas (Bloom 2005), while our study shows an increase driven transportation costs in these particularly remote settings.
Client dynamics around care seeking from contracted out facilities is a new area explored by this study as concentrating evaluations tend to concentrate on quantitative outputs.

We generated provider costs for a range of services and its projection with increased patient volume. While there is a dearth of local standardized unit cost figures for comparison, our study provides a starting point for generation of national level cost figures.

Limitations: Due to lack of baseline data we were not able to use Before and After design with Control' for this study and instead applied Endline Assessment with Control. The study design used may have underestimated the actual performance of contracted out RHCs as given that the contracted out RHCs were more remote than comparable RHCs, these facilities to start with had probably lower health service

measures than other comparative RHCs, and hence the proportional improvement was likely to be higher.

There were also other methodological limitations. We were not able to report the technical process of care for deliveries and newborn care at both contracted out and non-contracted out sites due to limited deliveries observed during daytime at both contracted out and non-contracted facilities. In District Chitral we were unable to observe single delivery at non-contracted sites due to inadequate infrastructure and preference for home deliveries. Provider cost analysis costs were not arranged according to activities and involved a series of assumptions.

POLICY IMPLICATIONS

- Contracting out of government facilities to NGOs can comparatively increase access to MNH services in remote rural settings. Confined contracting out of government health facilities in disadvantaged locations can be strategically employed as a health systems innovation. This is a policy option that should be considered against blanket contracting of both well and poorly functioning facilities as being currently practiced in Pakistan.
- Supportive measures are needed to accompany contracting out in remote areas. Although contracting out improves efficiency of health facility, it does not improve overall access to MNH services in catchment area.
- Even with contracting out initiative in place, the quality of care needs further improvement specifically for staff training and availability of necessary drugs and supplies for BEmONC signal functions to enhance the overall service utilization RHCs.
- Inadequate transportation remains the biggest issue in remote Union Councils even after improvement in supply side through contracting out.
- Clients are vulnerable to costs around childbirth and there is an absence of safety nets to meet travel costs, and costs of extra diagnostics unsupported in budgets of contracting out.
- Awareness and willingness to pay amongst mothers and their spouses is least for promotive services such as continuity of ANC check-ups, PNC, contraception and immunisation in both districts. This requires intervention in demand side measures.
- Better utilization was seen in economically autonomous women for at least newborn care if not for maternal care.
- Accompanying measures for transportation, behavioural change, enhancing women's economic autonomy and protection from catastrophic expenditure are needed to accompany contracting out in remote rural settings. These must necessarily involve male members of the household due to their pivotal role in decision-making. Such measures may include conditional cash transfers and vouchers to stimulate demand for preventive services; male inclusive BCC strategy; safety nets such as community insurance, community saving funds, and health equity funds; linkage with female economic empowerment schemes such as the BISP.

- Contract design needs to carefully build in incentives for quality of services and outreach coverage. Some important areas that need to be considered are:

    i. Relatively better coverage of MNH services is seen when administrative control of both facility and outreach services is given to the contracted provider.
    ii. Contracting out need not result in better quality care processes hence standard operating procedures are needed to accompany contractual arrangements.

Risk of under estimation of contracting out budget is high in remote settings. As first, an enhanced range of services and diagnostics may be offered to increase access and second, staff may require added financial incentives. These require support through an enhanced budget to ensure affordable services or the setting up of health equity funds in case costs are passed on to patients.

References

Bloom, E. et al. (2006). Contracting for health: evidence from Cambodia.: Working paper. Washington DC: Brookings Institution.

Borghi, J. O., Ensor, T., Somanathan, A., Lissner, C., & Mills, A. (2006). Mobilising financial resources for maternal health. *The Lancet, 368* (9545), 1457-1465.

Danel, I., LaForgia, M. (2005). Contracting for basic health services in rural Guatemala – comparison of performance of three delivery models. In LaForgia, M. (ed.) *Health system innovations in Central America: lessons and impact of new approaches*. World Bank Working Paper No. 57. Washington, DC: World Bank.

Filippi, V. et al. (2006). Maternal health in poor countries: the broader context and a call for action. *The Lancet, 368* (9546), 1535-1541.

Lagarde, M., Palmer, N. (2009). The impact of contracting out on health outcomes and use of health services in low and middle-income countries. *Cochrane Database of Systematic Reviews, 4*.

Liu, X., Hotchkiss, D. R., & Bose, S. (2008). The effectiveness of contracting-out primary health care services in developing countries: a review of the evidence. *Health Policy and Planning, 23*(1), 1-13.

Mavalankar, D. et al. (2009). Saving mothers and newborns through an innovative partnership with private sector obstetricians. Chiranjeevi scheme of Gujarat, India. *International Journal of Gynaecology and Obstetrics, 107*(3) 271-6.

PDHS, (2007). Pakistan Demographic and Health Survey 2006–07 National Institute of Population Studies and Macro International Inc., Islamabad, Pakistan. Retrieved April 25, 2012, from http://www.measuredhs.com/pubs/pdf/FR200/FR200.pdf

Social Policy and Development Center (SPDC). (2001). Social Development in Pakistan: Growth, Inequality and Poverty. Oxford University Press. Karachi.

Taylor, R. F., Preker, A. S., & Harding, A. L. (2003). Contracting for health services. Private Participation in Health Services. Washington DC. World Bank.

TRF, (2011). Zaidi S., Rehman, F., Narejo, S., Akhund, G.H. Situation Analysis for Post Devolution Health Sector Strategy of Sindh Province.

Martinez, J. et al. (2010). Third-Party Evaluation of the PPHI in Pakistan. Technical Resource Facility and Sosec. Unpublished document.

Zaidi, S., Bhutta, Z. (2009). Result Based Financial Mechanisms for Improving Maternal, Newborn and Child Health Outputs: Feasibility Study for 10 NPPI Districts. Online available at http://mother-childlink.tghn.org/articles/result-based-financial-mechanisms-improving-maternal-newborn-and-child-health-outputs/

Zaidi, S., Bhutta, Z., Shaikh, S. (2012). Landscaping finance support platforms for the improvement of basic and emergency obstetric care. Unpublished Document.

Annexure

Annex1: Methods and Sources for PCA (addendum)

Personnel costs: Onsite interviews with technical staff providing MNCH services were held to determine the average time they allocated to provide direct MNCH services which included treatment documentation (e.g. clinical records, prescriptions, lab test requisitions, referrals). The remaining time was allocated to undertaking administrative activities (e.g. staff meetings, HMIS report preparation, maintaining pharmaceutical stores inventory). For technical staff delivering both MNCH and non-MNCH services (medical officer, dispenser, technician), where available, service activity records were used to estimate the proportion of time each spent providing direct MNCH services. For each of these MNCH technical staff the amount of time spent on administrative activities is calculated based on the percentage of total direct service time each spent providing direct MNCH services. A weighted average has been calculated of the percentage of average time spent providing direct MNCH services by all technical staff providing MNCH services.

The skill mix of technical, administrative and support staff is different at each of the RHCs. Where the same positions existed at both RHCs, the salary ranges were different. The mid-point of the salary range for each position at each RHC was used for calculating standard salary costs. Table below shows the distribution of staff time at both RHC's:

RHC technical staff time % distribution for MNCH direct service and administrative activities

	Shagram RHC, Chitral		Keti-Bunder RHC, Thatta	
Technical Staff	**Direct MNCH service time %**	**Admin MNCH activities time %**	**Direct MNCH service time %**	**Admin MNCH activities time %**
Medical Officer	82%	18%	67%	33%
Women Medical Officer	83%	17%	n/a	n/a
Staff Nurse/ Anaesthetist/	75%	25%	85%	15%
Midwife	n/a	n/a	69%	31%
Lady Health Visitor	75%	25%	n/a	n/a
Dispenser	50%	50%	50%	50%
Lab Technician	67%	33%	n/a	n/a
Vaccinator	50%	50%	50%	50%
Weighted Average %	**68%**		**66.3 %**	

Cost of medicines, medical supplies and laboratory test and ultrasound supplies: The standard medicine unit costs for all the MNCH medicines are based on the median costs of all the generic versions of these medicines available in Pakistan based on the Standard Pharmaguide Red Book Online. No information is available on the discounts secured in the purchase of the medicines supplied by AKHS, P and the DoH to the two RHCs, so full trade prices were used from the Pharmaguide. This has the effect of overstating the standard medicines costs and the total standard costs. Vaccine costs were obtained from Central Office of the EPI Program. The unit costs of medical, laboratory test and ultrasound supplies were taken from AKHS, P records and used as standard costs.

The determination of medicines and medical, laboratory and other clinical supplies costs allocated to MNCH services was based on the following assumptions for proportion of service volumes and costs:

- For medicines and supplies used only for MNCH services, 100% of these costs were included;
- For medicines and supplies used by all patients, the percentage cost allocation to MNCH services was based on the proportion of total services provided that were MNCH services;
- For medicines and supplies used only for adults, the percentage cost allocation to MNCH services was calculated using the proportion of total services provided that were maternity services and the estimated proportion of outpatients that were >15.
- For medicines and supplies used only for children, the percentage cost allocation to MNCH services was calculated using the estimated proportion of <15 year old patients that were <5.

Fixed costs: The Fixed costs at both RHCs include the administrative activities component of the salaries of technical staff providing MNCH services; administrative and support staff salaries; and other operating costs including utilities, stationary, repairs and maintenance, generator fuel and depreciation. The other operating costs were obtained from the trial balances provided by the AKHS, P and other books of accounts of AKHS, P and DHO of the respective districts and other relevant records provided during the onsite visits. Interviews, where relevant, were also conducted to determine the costs and allocations. The proportion of total administrative and support staff salaries and other operating costs allocated to MNCH services is based on the percentage of total technical staff FTEs at each RHC providing MNCH services. Fixed costs for the provision of MNCH services entered into the CORE Plus costing tool include: the administrative activities component of the salaries of technical staff providing MNCH services; administrative and support staff salaries; and other operating costs including utilities, stationary, repairs and maintenance, generator fuel and depreciation.

Standard Treatment Guidelines: For the CORE Plus costing tool, Standard Treatment Guidelines for each MNCH service are used to help complete the Service Costing Framework (SCF) for each MNCH service. For each SCF the following information needs to be entered: standard times to be spent by each provider staff member (e.g. obstetrician, medical officer, midwife, dispenser) on each task (e.g. registration, examination, and consultation, clinical visit documentation, filling a prescription, taking and testing a blood sample) need to be entered. These standard times required for each service are not part of the National MNCH guidelines for RHCs, BEmONC or CEmONC. Consequently each provider staff member was interviewed by the medical

doctor member of the PCA research team to estimate the average amount of time needed to perform each task to provide quality standard care. (See Annex 4 for the data collection sheets). This has the effect of inflating the standard provider salary cost per service, as well as the total cost per service, for each MNCH service. Consequently, these are indicative standard times, not actual average times. These indicative times were then entered into SCFs in the CORE Plus tool which calculates costs per service using the relevant indicative standard times for each service provided. The CORE Plus tool calculates the costs per service on the basis that every service provided uses the full indicative standard time for each service which is ideal, but is not necessarily needed to provide a quality service. This calculation bias results in higher costs per service and in standard staffing levels which are ideal, but need to be considered in view of what is practically needed to provide quality services.

Sources of Standard Treatment guidelines and adaptations: Standard Treatment Guidelines inputs for medication, supplies and tests are based on WHO guidelines for essential MNH care and IMCI guidelines for the treatment of the sick infant and child. These were adapted to National MNCH guidelines for MNH care at RHC level. National guidelines for BEmONC and CEmONC were used to obtain the standard dosages of each of the medicines. The list and dosages of drugs, supplies and tests for each STG was reviewed by an expert gynaecologist/obstetrician and paediatrician. For standards of the percentage of cases for which each medicine, medical supply, test and treatment is needed, national and international literature was used. Information on rural incidence and prevalence from the 2007 PDHS was used wherever available, while for the remaining conditions local literature was used to estimate the frequency of when particular medicines would be required. The sources are summarized in Annex 2.

Annex 2: Sources of Data for Prevalence of Different Conditions

Problem	Prevalence
Malaria in pregnancy	22.1% (PDHS 2006-07)
Pregnancy induced hypertension	10% (Cochrane 2007)
Pre-eclampsia and Eclampsia	4.1% (PDHS 2006-07)
UTI in pregnancy	20-30% (Saeed S 2011)
STD in pregnancy	20% (Gul F 2005)
Episiotomy in delivery	10% (approximated with % of Assisted Deliveries)
Haemorrhage in delivery	7% (PDHS 2006-07)
Neonatal sepsis	5-15% (Bhutta Z 2004)
Severe Pneumonia	20% (Javed A 2005)
Diarrhoea requiring injectable treatment	3% (PDHS 2006-07)

Annex 3: Balanced Scorecard (BSC) Domains

A. **Patient satisfaction**
1.Patient's readiness to avail lab tests and drugs
2. Patient's inclination for facility based delivery
3. Overall patient satisfaction
B. **Staff satisfaction**
4. Staff satisfaction with supervisory visits
5. Staff satisfaction with facility work environment
C. **Staff capacity**
6. Staff receiving training in maternal health
7. Staff receiving training in newborn health
8. Staff knowledge score
D. Service provision
9. Communication to mothers about newborn danger signs
10. Communication to mothers about antenatal care & post-partum danger signs
11. Communication to mothers about appropriate breastfeeding
12. Women prescribed folate
13. Women advised TT vaccine, ultrasound and lab tests as appropriate
14. Women provided appropriate antenatal physical assessment
E. Health facility functionality
15. Appropriate staffing
16. Available drugs
17. Available supplies and equipment
18. Availability of services (lab services and BEmONC signal functions)
19. Availability of any waste disposal mechanism
20. Available HMIS records
21. Availability of any service delivery guidelines
21. Availability of any service delivery guidelines

Annex 4: List of MNH Services Cost by the PCA

1) Antenatal Care Visits
2) Normal Obstetrical Deliveries
3) Assisted Obstetrical Deliveries
4) Caesarean Section Deliveries
5) Newborn Care
6) Postnatal Care Visits

Annex 5: Available Diagnostic Tests in Contracted out RHCs and User Fee

Diagnostic Tests	User Fee (PKR)
RHC Keti-Bunder	
Ultrasound Scan	10.0
Pregnancy Test	6.0
Haemoglobin Test	60.0
Blood Sugar	19.0
RHC Shagram	
Stool DR	35.00
MP Test	90.00
CBC	165.00
ESR	55.00
Blood group and RH factor	90.00
Ultrasound Scan	75.00
Pregnancy Test	16.00
Haemoglobin Test	75.00
Urine DR	40.00
Urine Albumin and Sugar	80.00
HBV Test	85.00
HCV Test	85.00
Pro-thrombin Time	20.00
Blood Sugar	65.00
Blood Transfusion	285.00
Serum Billirubin	70.00