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DIAGNOSING QUALITY OF REPRODUCTIVE HEALTH SERVICES PROVIDED THROUGH PUBLIC HEALTH SYSTEM IN INDIA: APPLICATION OF SYSTEM'S FRAMEWORK

P.R. Sodani

Quality of care has emerged as a central issue in reproductive health. The need for improving quality is intensely realized, as the health services remain grossly under-utilized despite an extensive network of infrastructure and manpower. The study has been carried out to assess the quality of care of reproductive health services and to determine factors responsible for the current level of quality of reproductive health services in the context of public health system in Udaipur district of a major Indian State Rajasthan. The study is based on both primary and secondary data. It has used both quantitative and qualitative information. Bruce Quality of Care framework has been used to assess the quality of care, which incorporate six elements: choice of methods, information given to users, technical competence, interpersonal relations, follow-up/continuity mechanisms, and appropriate constellation of services. These elements reflect six aspects of the services, identifying client experience as critical. The quantitative score for each indicator has been calculated. The overall score for the quality of care for the district worked out to be 37 on a scale of 0 to 100. This shows that the current situation of quality of care in the district is poor. To determine the factors affecting the current performance of quality of care, a systems approach, using Jain's Diagnostic Model (consisting of five components, viz., Desired Output, Environment, Input, Information, and Process) has been used. After detailed diagnosis of these components, a few vital factors have been identified as highly important, with low favourability and highly manipulable for improving systems performance.

INTRODUCTION

Quality improvement in providing of reproductive health (RM) services is expected to have an important impact on efficiency, client satisfaction and utilisation (Geyndt, Willy De 1995; Satia, Jay, 1993; and Pathfinder International, 1993). Quality of care is often considered unaffordable for programs with limited financial resources. However, ensuring quality of care is more likely to result in a more efficient use of resources, because the interventions will have greater health benefits. It will result in a larger, more committed clientele of satisfied clients.

86 Diagnosing Quality

Recent attention to the quality of RH services has highlighted the fact that historically, these services have usually been evaluated more in terms of the degree to which they have achieved demographic objectives, such as fertility decline or the reduction of infant and maternal mortality, than in terms of the quality of the services deployed to achieve those outcomes. The quality of routine operations of RH services that daily serve millions of people worldwide and may have significant impacts on both safe and informed contraceptive choices and safe motherhood practices has become the focus of donor and government attention only in the last few years.

India has made considerable progress in the last few decades in expanding the public health system and reducing the burden of disease. The National Health Policy (NHP) of 1983 has set targets for improving the health status of the population and reducing fertility. An extensive infrastructure has been developed during the last decade for public provision of primary health care services. Partly as a result of these efforts, the infant mortality rate (IMR) at the all India level had been reduced to 74 per 1,000 live births by 1994. The situation is more alarming in the case of Rajasthan. The present health care system in Rajasthan is faced with serious problems with respect to efficiency, effectiveness and quality. These problems prevent the health system from achieving the desired outcomes.

Quality of care has emerged as a central issue in reproductive health. The need for improving quality is intensely realized, as the health services remain grossly under-utilized despite an extensive network of infrastructure and manpower. The focus of the large projects at state or national level has mainly been on infrastructure and manpower development, with less concerted attempts to improve the service utilization and service quality (UNFPA, 1992).

OBJECTIVES

The objectives of the paper are to assess the quality of care of reproductive health services and to determine factors responsible for the current level of quality of services in the context of primary health care in Udaipur district of a major Indian state, Rajasthan.

METHODOLOGY

The study was conducted in Udaipur district of Rajasthan. District as a unit was identified for the study. The Udaipur district was selected because; a) it is one of the 90 poor performing districts in India, identified by the Department of Family Welfare, Ministry of Health and Family Welfare, Government of India. The poor performing districts are characterized by high birth rates, high infant mortality rates and very low levels of institutional deliveries.; b) it is one of the tribal districts of Rajasthan with about 40 per cent tribal and disadvantaged population; and c) The researcher is well acquainted with the district and has had experience of working with the Health Department in various projects in the district. Hence, it was assumed that the district management would render better cooperation in collecting data and information.

Assessing Quality of Care: To assess the quality of care in Udaipur district, the Bruce Quality of Care framework has been used (Bruce 1990). Bruce has proposed that several program features can be thought of as the operational components of quality of care in family planning programs. These program features are the six elements that together constitute quality of care: (1) choice of methods; (2) information given to clients; (3) technical competence; (4) interpersonal relations; (5) Follow-up or continuity mechanisms; and (6) appropriate constellation of services. These elements reflect six aspects of services that clients experience as critical. This framework is meant to provide an ordered point of departure from which to develop a description of the service unit and define its quality. The framework is centered on the experience of those who have gained access to services. The client usually does not see the apparatus behind her experience, all the vital work required to provide the services. Thus, policies, resource allocation decisions, and management tasks that precede the delivery of services are not directly experienced, but their outcome and the service giving is. The analytical framework proposed by Bruce (1990) links the hypothesized relationships between program effort, quality of service experience, and its outcome. The Bruce Framework was proposed for family planning programs, however, in the present analysis we used the framework developed by Sodani, which is fundamentally an extension of Bruce framework for the Safe Motherhood programs includes family planning and mother and child health (MCH) programs (Sodani 1997, 1999). The

88 Diagnosing Quality

extended framework suggested by Sodani has been quite useful and beneficial for the program managers working in developing countries.

To measure the quality of care it is necessary to make each element operational. The indicators are identified to measure each element. The identified indicators provide a detailed picture of the quality of services provided at the grassroots level. Each indicator is derived by using the frequency distribution for a single item, collected from concurrent evaluation (1). The raw frequencies are normalized by ensuring that all are measured on a scale from 0 to 100, where 100 is the highest score. The quantitative scores for each indicator are calculated in this manner. The summary scores for each element are the average of all the constituent indicators of that element, because each is felt to be of equal importance. Exactly the same considerations have been followed for development of overall summary score of quality for the program, each element weighted equally.

Since data on other component of reproductive health (RH) i.e. reproductive tract infection (RTI)/sexually transmitted disease (STD), acquired immuno deficiency syndrome (AIDS) were not available, therefore, only two components i.e. family planning (FP) & safe motherhood (SM) were included in the study.

Factors Influencing Current Performance: To determine the factors affecting the current level of quality of care of reproductive health services, system approach, specifically, Jain’s Diagnostic Model is used (1998).

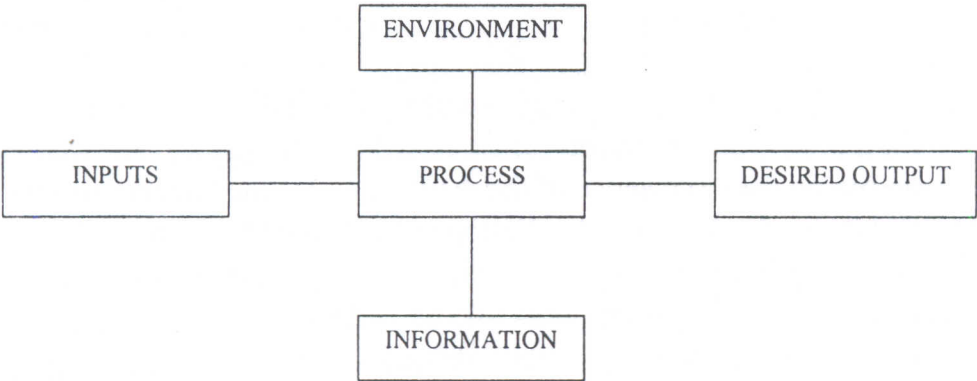


Figure 1: Jain’s Diagnostic Model

The concrete way of describing a system is to say that its anatomy consists of five basic components, namely 1) Desired Output (DO), 2) Environment,

3) Inputs, 4) Information, and 5) Process. Its physiology is characterized by the interdependence of these components, and change in one component vibrates through all the other components. The greater the degree of interdependence among components, the more cohesive is the system. According to framework a system's performance is a function of the DO, Environment, Inputs, Information and Process:

$$\text{System Performance} = f(\text{DO, Environment, Inputs, Information, Process})$$

Desired Output (Component I) According to the model, we have to find whether the system under study (i.e. Quality of care of RH services) has any stated DO; if yes, then, whether the DO is measurable, acceptable by all the stakeholders, precise, and easy to understand.

Environment (Component II) includes those factors, which influence the system, but are not under the direct control of the system processor. In other words, those are the 'givens'. The identified environmental factors are analyzed and rated on a five-point scale in terms of their importance (how important the factor is in influencing the quality of care), favourability (the extent to which the factor makes a positive contribution), and manipulability (how easy it is to influence the factor).

Inputs (Component III) include all that enter the system on the consent of the processor. The consent may be automatic or imposed on the processor. The inputs mainly include resources (financial and manpower), technology (buildings and transport), customers, supplies, donations, etc. They are analyzed in terms of quantity and quality. The identified input factors are analyzed and rated on a five-point scale in terms of their importance, adequacy, and manipulability.

Information (Component IV) The quality (i.e. reliable, timely, accurate, complete, and relevant) information on all the other components (Desired Output, Environment, Inputs and Process) of the system are needed by the manager for effective management of the system. The identified factors are analyzed in terms of their adequacy, quality, importance and manipulability. The rating for each factor has been done on a five-point scale.

Process (Component V) It is the most important component. The DO is achieved through process. The process has two components: i) processor

90 Diagnosing Quality

and ii) processing system. The processor can be defined as the key player of the system, who has the power/authority to achieve the DO. The following characteristics, which influence the processor in processing, are measured in this study: concern for quality of care, competence to provide quality services, and continuity with the system. These are assessed for current status and manipulability on a five-point scale. Processing is a function, which achieves the DO by manipulating all the boxes. These are assessed on importance, current status and manipulability on a five-point scale. The processing system is analyzed on various management practices used in the system. These are soundness of strategy, implementing, planning, monitoring, coordination, motivating, etc. These are assessed on current status and manipulability. For assessing the factors influencing the current performance of the quality of care, data are collected from published and unpublished sources as well as through discussions with various key personnel.

RESULTS AND DISCUSSIONS

Current Status of Quality of Care

The scores are presented on each element of quality of care. The scores are given for two reasons. First, to illustrate that describing quality of care in quantitative, aggregate terms is possible. A second reason for presenting them is the fact that these scores can be used by the program manager to assess the services provided by their programs. These are also helpful in developing a strategy for improving the quality of care. These scores cannot be said to represent good or bad quality, because absolute standards are inappropriate (Jain et. al., 1992). They could be used, however, within a standard-setting process for the particular district. These scores could be used as a benchmark to measure progress in improving the quality of services in the study district over the next few years. For a detailed discussion on each of the element readers are encouraged to refer the earlier work done by the author (Sodani, 1998). The summary indicator score for each element is given in Table 1. The

overall score, based on the average of all element scores is 37, shows a poor quality of care.

Table 1: Summary Score on Elements of Quality of Care in Udaipur District

Elements of Quality of Care	Score
Choice of Methods	57
Information Given to Clients	25
Technical Competence	30
Interpersonal Relations	45
Follow-up/ Mechanism for Continuity	27
Overall Score of Quality of Care	37

Factors Influencing Current Performance of Quality of Care

Desired Output

Jain's Diagnostic Model, starts with the desired output of the system. In the present study, 'system' is the quality of care of reproductive health services in Udaipur district. The system's performance, here, means performance of reproductive health services with respect to quality of care. It is observed that the system measures the performance of reproductive health services in terms of the number of clients receiving contraceptive methods (i.e. intra uterine device (IUD), oral pills and condom), and the number of pregnant women registered for antenatal services. These performance indicators are not able to say anything about the quality-of-care being provided by the health department in the district. These performance indicators tell us about the coverage of the services only.

High performing systems tend to have a firm statement on the Desired Output (DO). Further, this statement tends to be clear, precise, measurable, and acceptable to all major stakeholders. The Target-Free Approach emphasizes on providing quality services, but there are no guidelines and indicators for quality of care. An important finding of the study is that neither the Government of Rajasthan nor Udaipur district has a clear statement on the desired output pertaining to quality of services. What is stated is as follows: "*The programme's performance should not be seen with respect to targets, but there is need to give more attention to the quality aspect*" (Directorate of Medical & Health Services (DM&HS) 1996).

92 Diagnosing Quality

The above statement is very vague. The statement is not clear, precise, and measurable. The government had not set any specific indicators for measuring the quality of care. In the absence of a clear statement of goals and sound indicators for measuring quality of care, it is no surprise that so little progress has been made to achieve high quality.

Environment

In providing quality of RH services in Udaipur district, the environmental factors play an important role. The system has to depend on the physical characteristics of the area and the socio-economic and demographic characteristics of the population. The stakeholders, namely, the Government of Rajasthan, Non Governmental Organisations (NGOs), voluntary agencies, research and training institutions, private practitioners and traditional practitioners, also have influenced the system. Other factors, i.e. infrastructure development, policy guidelines, political interference have also influenced the system's performance.

Physical Characteristics: Udaipur district is situated in the southern part of Rajasthan, and is oval in shape with a very narrow strip stretching towards the north. It lies between 23° 46' and 26° 2' north latitudes and 73° and 74° 35', east latitudes. The district covers an area of 12412 sq. km. The northern part of the district consists generally of an elevated plateau, while the eastern part has vast stretches of fertile plains. The southern part is covered with rocky, hills and dense forests, whereas the western portion, known as the Hilly Tracts of *Mewar*, is composed of the *Aravali* range. Stretching from Bhim *tehsil* of Rajasmand district, the *Aravali* range runs south-westerly and spreads towards the valley of the *Som* river. There are two important passes in *Aravali* range, viz., *Desuri Nal* and *Sadri*. Udaipur district's major portion is covered with rocky hills, which are well covered with forests. The river *Banas* and its tributaries flow through the eastern parts of the district. Other rivers in the district include *Som*, *Jakham*, *Wakal*, *Sei*, *Sabarmati*, and *Berach*. All these are non-perennial rivers, which flow during the rainy season only. These geographical conditions have resulted in vast rural areas with isolated communities and sparse distribution of households. It is responsible for lesser contact between service provider and client, which results in less continuity services to the rural and remote areas of the district. In the rainy season, some parts of the district get

disconnected with the district headquarters, because of rivers, affecting the supply of contraceptives and monitoring of district level officers.

Socio-economic Characteristics: The status of women is very low. The uneven sex ratio might be explained by the unfavourable accessibility to modern health services for women. The literacy rate in the district especially among women is significantly lower than the average literacy rate of the state. The broad stratum of literate in the district forms 35.5 per cent of the total population as ascertained during the 1991 census. However, there is still a marked difference in the literacy rates of the two sexes. Female literacy rate is falling behind male literacy rate in all parts of the district (in both rural and urban area). A majority of the population in the district belongs to Scheduled Tribes (around 37 per cent). This is a tribal belt, where most of the people reside on hills and mountains. Hence, the nature of the population is not compact, but scattered. The tribal people are very poor and backward, and their means of sustenance is either the forest or the agriculture. The agricultural practices in the tribal areas are very primitive and they have to depend on the monsoon as the main source of water to irrigate their crops. As far the economic status of the district is concerned, a majority of the population is engaged in agriculture and agriculture related work. But, about 60 per cent of the work force is unemployed.

Early adolescent marriage is common in the state, as well as in Udaipur district. Adolescent and child marriages have an adverse affect on the reproductive health of the mother, and the health of the new born. This, in turn, results in high maternal and child morbidity and mortality in the district. The community in the district is traditionally oriented, and has little contact with modern society. Even today, a majority of the people has a traditional perception about diseases and their treatment. In case of illness, they often approach the local healers and other traditional health providers. It affects interpersonal relations of providers with clients.

Population Characteristics: The population of the district is predominantly rural in character. According to the 1991 census, about 82.9 per cent of the people live in rural areas. The district has recorded a growth rate of 22.5 per cent as compared to the state growth rate of 28.4 per cent. The growth rate in the rural areas of the district during the decade works out to 19.6 per cent, while it comes to 39.1 per cent in urban areas meaning thereby that the population of the district has grown at a faster rate in urban areas than

in its rural areas. According to the 1991 census, density of population in the district is 167 persons per sq. km. There is a sharp variation in the density of population in rural and urban areas. In the rural areas, the density of population is only 161 persons per sq. km. The sparse population makes provision of reproductive health services by the health workers in rural areas very difficult. According to the 1991 census, 8.3 per cent and 36.8 per cent people among the total population in the district belong to Scheduled Castes and Scheduled Tribes. A majority among the Scheduled Castes and Scheduled Tribes reside in the rural areas of the district. Out of the total Scheduled Caste population, 78.2 per cent are rural based, and among the Scheduled Tribes, 97 per cent live in the rural areas of the district. This situation influences the continuity of services.

Resistant Communities: The district health officials have identified various communities, i.e., Banjara, Patel, Garadiya, Kalbeliya, Gadia Luhar, and Kanzar, as 'resistant' to accepting the family welfare and health services provided by the department. The district health department estimated the population of such communities around 2.75 lakhs in the district. The Banjaras and Kalbelliyas are basically nomads who keep moving from place to place. Therefore, it is difficult for the district level health system to provide quality services to them in reproductive health. The other communities, due to their traditional beliefs and values, do not attach much importance to reproductive health services. It affects the interpersonal relations and continuity of services.

Infrastructure Development: The district lacks adequate infrastructure for transport and communication facilities. There is only one national highway, five state highways, and seven major district roads which connect important marketing centres in the district. All the important places of the district are connected by bus routes. The district is connected by a metre gauge line of the Western Railway. A rail line, connecting Mavli Junction with Marwar Junction, passes through the district. Separate line joining Delhi, Jaipur and Chittorgarh with Udaipur pass through Mavli. The Udaipur-Himmatnagar line is also connected to Udaipur City. Transportation and communication infrastructure is available in towns and cities. In villages, the facilities of transportation and communication are not good, only 40 per cent of the villages have the facilities of bus transport, 0.7 per cent have the facility of railway transport, and 18.3 per cent the facility of telephone

in the village. Most of the community health centers (CHCs) and primary health centers (PHCs) are adequately connected, if reliable and regular public/ government transport is available. The road infrastructure to the more isolated villages and sub-centers (SCs) is not adequate. Many hilly and tribal villages are connected by dust roads, making transport of referral patients from SCs or homes to referral institutions difficult. This influences the continuity of services in the district.

Stakeholders: The organizations, groups, and individuals that have an interest or “stake” in the success of the system are called stakeholders (Duncan, et al., 1995). Some of these stakeholders are almost always powerful or influential, some others are influential regarding only certain issues, and still others have little influence and power. The following key stakeholders are identified to assess their influence on the performance of the system: the Government of Rajasthan, donors, research and training institutes, NGOs/voluntary agencies, and traditional practitioners.

Government of Rajasthan The Government of Rajasthan is keen to improve the quality of RH services in the state. The Department of Medical, Health, and Family Welfare, Government of Rajasthan has initiated various efforts, i.e. conducting concurrent evaluation in the state for RH services to improve the quality of services. The district officials would get full support for improving the quality of services from the state government.

Donors Various international funding agencies are interested in providing funds to Udaipur district due to the low socio-economic and health status of the district. Due to tribal district, a number of organizations are providing funds for the socio-economic development. The United Nations Fund for Population (UNFPA), a major funding organisation in Rajasthan, is working for improving the quality of care in RH services. There are good chances for mobilizing funds for quality improvement in the district.

Research and Training Institutions Various research and training institutions are working in the state, and they can be very supportive in improving the quality of care in reproductive health services. The Population Research Centre of Mohanlal Sukhadia University, Udaipur, can be a good resource for conducting surveys for client satisfaction and other aspects of the programme. Tribal Research Institute, a state government organisation in Udaipur, is working for the socio-economic development of the tribal, is a

96 Diagnosing Quality

good resource to know more about tribal culture and traditions. Indian Institute of Health Management Research, Jaipur, an organisation in the private sector, dedicated to improving the health status of the people through training, research, and conducting consultations in quality improvement in RH services, offers a good opportunity for the system. The State Institute of Health and Family Welfare, an organisation set up by Government of Rajasthan, is also working in the field of training and human resources development of health officials. It could be utilised by the system. The expertise available with these institutions could be manipulated for improving the quality of RH services in the district.

NGOs and Voluntary Agencies It has been recognized by the Government of Rajasthan that NGOs and voluntary agencies have considerable advantage over the government system in terms of acceptance and co-operation with the local communities because of their personalised approach, high degree of motivation, sensitivity, and responsiveness to the peoples' needs. NGOs are flexible enough to experiment with innovative and alternative approaches in solving reproductive health problems. There is a good stock of NGOs and voluntary agencies in the district, mostly small ones and working at the community level. Most of the NGOs in Udaipur district are active in the area of agriculture and a forestation, water supply, irrigation, and income-generating activities aimed at comprehensive socio-economic development at the community level, particularly among the tribal communities. In the reproductive health area, NGOs are less active in providing clinical services, but more active in information education communication (IEC).

The major NGOs, namely *Seva Mandir*, *Astha*, and *Arth* are the leading NGOs playing a pioneering role in the field of health care. *Seva Mandir* implements schemes, such as training of traditional birth attendants TBAs, provision of *Mamta* Kits (safe delivery kits), provision of antenatal and post-natal services through TBAs at community level. In addition, the organization aims at training pre-school teachers in first aid, hygiene, and sanitation. The agency is active in making awareness about STD/AIDS in the tribal areas, and areas close to National Highway No. 8, which passes through the district. The agency is active in supervision of workers by communities, and cost recovery of medicines, and has established local offices in the tribal areas. *Astha*, is a field based support/ resource organization working with communities in the fields of capacity building,

rural development and people's rights. The agency has a strong base in Udaipur district, and provides training to other NGO and government personnel in the field of health related issues. *Arth*, is an action research organization in the field of health and currently busy with improving the quality of care of Reproductive Health services through specific intervention in the selected areas of the district.

Traditional Practitioners The public sector and the private sector serve as complements to each other in providing reproductive health services in the district. Most of the traditional practitioners in Udaipur district are not registered. They are providing health care services through traditional systems of medicine. In addition to the public health system and private practitioners of the allopathic system, a range of other unrecognized practitioners, known as traditional practitioners, play a leading role throughout the district, particularly in rural areas, because of general reluctance to consult the public health system about reproductive and sex related problems. Local traditional practitioners have an advantage over public health institutions. The traditional practitioners are likely to be part of the local community and known to the family members. Moreover, the traditional practitioners are likely to devote more time and attention to their patients than their allopathic counterparts. District officials reported that traditional practitioners may spend much more (three to four times) with their patients as allopathic practitioners. The role of the private sector is very important in providing quality care because most of the people utilise the services from the private sector, though the services being provided by traditional practitioners in the rural areas are of very low quality.

Government Policy: In 1992, the Ministry of Health and Family Welfare, Government of India, prepared an action plan for revamping the Family Planning Programme and recommended modification of the existing strategy of targets and incentives. The Sub-committee on Population of the National Development Council (also known as Karunakaran Committee) also made a similar recommendation. But, these recommendations could not be operationalised till 1995 when the Government of India started experimenting on a "Target-Free Approach" on a pilot basis in one or two districts in each state. The paradigm shift in the FW program took place in 1996 when the Government of India adopted the Reproductive and Child Health (RCH) approach advocated at international conference on population and development (ICPD), Cairo, and introduced a Target- Free Approach all over the country. The Government of Rajasthan also adopted the Target-

98 Diagnosing Quality

Free Approach in its FW programme. Looking to the essential needs and recommendations of the Sub-committee on Population, the Government of Rajasthan has introduced the innovative scheme of concurrent evaluation for the RH programme in all districts as part of improving the quality of services.

Political Interference: It occurs in several forms at various levels in the system. The more common forms are in purchase of medicines and equipment, postings and transfers, non-attendance at PHCs, SCs, etc. It is difficult to gauge the exact extent of these problems and their impact on the system. Political interference in postings and transfers are routine and well known in the public health services in the district. They harm the overall authority and management of the system managers' effectiveness in improving the quality of services. This has led to erosion of authority and accountability of officers and supervisors.

From the above analysis, it is clear that there are various environmental factors, which contribute to the current level of the quality of care of reproductive health services in Udaipur district. But, all the factors are not at the same level of importance, favourability, and manipulability. Table 2 provides an analysis of these factors in terms of their Importance (how important the factor is in influencing the quality of care), *Favourability* (the extent to which the factor makes a positive contribution), and *Manipulability* (how easy it is to influence the factor). The scoring of Importance and Favourability have been done on the basis of the findings of other researches reported in the literature, and the researcher's intuitive judgment, and of Manipulability on the basis of discussions with the district level officials. The rating for each factor has been done on a five-point scale (1-5), where 1 denotes the lowest value and 5 denotes the highest value. A system of rating is used so that no more than 20% items secure the same score. This is done to ensure greater degree of discrimination in scoring.

Table 2: Assessment of Environment

Factors	Importance	Favourability	Manipulability
Physical Characteristics	2	1	1
Socio-economic Status	2	3	2
Resistant Community	2	3	4
Tribal Population	1	1	2
Density of Population	1	1	1
Transport Development	3	3	2
Communication Development	3	4	3
Regulation for PMPs	4	2	5
State Government Support	5	5	3
Donors' Interest	1	4	3
Research/Training Institute	3	4	4
Role of NGOs/PMPs in Quality Care	4	2	5
State Policy/ Guidelines for Quality	5	3	3
Political Interference	4	3	2

Inputs

In order to assess the adequacy of the available inputs and the extent to which they are in place, the extent of facilities and staff have been compared with the Government of India norms, wherever they existed. The gaps between the norms and sanctioned inputs, and the inputs actually in place were compared. In cases where no government norms exist, interviews with facility managers were used to gauge their impression on adequacy of the concerned inputs.

Manpower: Health manpower can be divided into three categories: doctors, paramedical staff and administrative staff. There are certain established staffing norms for CHCs, PHCs, and SCs. The total number of staff in a district depends both on the extent to which facility norms have been met, and the adequacy of staffing of the existing facilities. Table 3 shows that almost all the positions of auxiliary nurse-midwife (ANMs) sanctioned at SC level are filled except few (only 2.4 per cent). The problem of unfilled positions of ANMs at SC level is slightly more in tribal areas, where about 2.8 per cent positions are lying vacant compared to the non-tribal areas, where only 1.7 per cent positions are lying vacant. Actually, the need for the availability of ANMs in tribal areas is more due to their being isolated, their tribal populations, and the community lacking easy access to the health facilities.

100 Diagnosing Quality

Table 3: Strength of ANMs at Sub-Centre Level in Udaipur District (as on August 1997)

Area	Sanctioned Posts	Filled Posts	Vacant Posts	Percent Vacant Posts
Tribal Area	357	347	10	2.8
Non-tribal Area	171	168	3	1.7
Total	528	515	13	2.4

Source: Office records maintained at the office of chief medical & health officer (CMHO), Udaipur, 1997.

Table 4 shows 13.7 per cent of the sanctioned posts of Medical Officers at the PHC level are lying vacant in Udaipur district. Comparison between tribal and non-tribal areas shows that the situation is more problematic in tribal areas (where 20.0 per cent positions are lying vacant) than the non-tribal areas (where only 3.3 per cent positions are lying vacant). This reflects that the Medical Officers do not want to work in the tribal pockets due to lack of transport and communication, non-availability of good housing, lack of good (English medium) schools for children, and a feeling of isolation from the professional communities living in Udaipur city and nearby areas. Sometimes, fresh medical officers are appointed whose basic objective is not service, but to make preparation for examinations in higher education (most probably the post-graduate courses).

Table 4: Strength of Medical Officers at PHC Level in Udaipur District (as on August 1997)

Area	Sanctioned Posts	Filled Posts	Vacant Posts	Percent Vacant Posts
Tribal Area	50	40	10	20.0
Non-tribal Area	30	29	1	3.3
Total	80	69	11	13.7

Source: Office records maintained at the Office of CMHO, Udaipur, 1997.

Table 5 shows that in Udaipur district about 27 per cent sanctioned positions of doctors (Junior Specialists, senior medical officer (SMOs) and medical officer (MOs)) are lying vacant. This has resulted in acute shortage of doctors at the CHC level (which includes positions of PPCs, RFWTC, and BPHCs, if working in the same building of CHC). The problem is more

prominent in tribal areas, compared to non-tribal areas, where almost 35 per cent of the sanctioned positions are unfilled. The reasons are more or less same as explained above for the medical offices at PHC level.

Table 5: Strength of JS/SMO/MO at CHC Level in Udaipur District (as on August 1997)

Area	Sanctioned Posts	Filled Posts	Vacant Posts	Percent Vacant Posts
Tribal Area	57	37	20	35.0
Non-tribal Area	35	30	5	14.2
Total	92	67	25	27.1

Source: Office records maintained at the Office of CMHO, Udaipur, 1997.

The above analysis was done with respect to the sanctioned positions only. We compared the sanctioned positions with the filled positions, and identified the gap between sanctioned and filled positions to know the extent of unfilled positions. The analysis suggests that there are fewer problems in case of posting of paramedical staff at SC level. The problem is more in case of doctors at the PHC and CHC levels in comparison to paramedical staff at the SC level. Again, between PHC and CHC levels the problem is more acute in CHCs. The tribal areas are suffering more due to unfilled positions affecting the quality of referral and other services.

There are certain Government of India (GOI) norms for staffing at CHC, PHC and SC levels. As per the norms, at CHC level, 4 doctors should be available. But, in case of Udaipur, on an average, sanctioned positions of doctors are 5.4 and filled positions 3.9 (which include positions of post partum center (PPCs), regional family welfare training center (RFWTC), and Block primary health center (BPHCs), if working in the same building of CHC) at CHC level. At PHC level, as per GOI norm 2 doctors, 7 paramedical, and 7 administrative staff should be available, but in case of Udaipur district, on an average, 1.1 doctors, 4.2 paramedical and 2.9 administrative staff is sanctioned and only 0.95 doctor, 2.8 paramedical and 2.5 administrative staff are actually filled. At SC level, 2 paramedical (male and female) should be available as per the norm, but only 1 post (female MPW) is sanctioned and 0.97 filled. This analysis shows that there exists a serious problem in the availability of staff as per norms set by GOI.

102 Diagnosing Quality

The above analysis shows that there is an acute problem of medical officers at CHC and PHC levels, particularly in tribal areas where about 37 per cent of the population is residing.

It resulted in the inadequate and non-functioning of an effective referral system in the district and causes a lowering in the quality of care when needed. Therefore, the ANM is also not confident in referring the patients at CHC level in case of emergencies. This shows that there is a high turn over of physicians in rural areas. They are not interested in taking the government positions because of low salary structure and lack of regular update of professional knowledge and skills, lack of adequate diagnostic facilities, and lack of adequate accommodation and schooling for children. In addition to this, there are problems of staff shortage, ubiquitous and chronic absenteeism (authorized and unauthorized), and perpetual personnel transfers. The quality of care in the district is being affected by low continuity of care, weak interpersonal relation between client and providers.

Building: Facility norms exist for facilities required to serve the rural population. The Bhore committee set down certain norms that were pursued in the initial five-year plans. During the Sixth Plan (1980-85), new norms were laid down for population coverage and staffing of CHCs, PHCs and SCs. These were one CHC per 1,00,000 population, one PHC per 30,000 population (20,000 in hilly, tribal and backward areas), and one SC per 5,000 population (3,000 in hilly, tribal and backward areas). In case of Udaipur district out of the total 11 blocks, seven belong to hilly and tribal areas and the remaining four to plains. A comparison of available physical facilities with the standards indicates that the recommended norms have been almost achieved in case of physical infrastructure in the district.

Table 6: Availability of Health Care Institutions in
Udaipur District (as on August 1997)

Area	Number of CHCs	Number of PHCs	Number of Sub-Centres
Tribal Area	10	46	357
Non-tribal Area	7	26	171
Total	17	72	528

Source: Office records maintained at the Office of CMHO, Udaipur, 1997.

The situation of health infrastructure is good in comparison with the norms prescribed by the GOI. However, only the availability of physical infrastructure in quantitative terms is a necessary but not sufficient condition for providing quality services. These buildings should be properly maintained for sustainable provision of quality services. While discussing with the district level officials it was noted that although the buildings through which the services are provided to the community (CHCs, PHCs, and SCs) are sufficient they are in poor condition.

The most critical issues are water supply, sewage and sanitation within the buildings. The main reason for poor building condition is the non-existence of building maintenance. Most of the institutions need rewiring of electrical fittings. The availability of water supply is one of the major problems in these buildings. Even the CHCs and PHCs collecting water from bore wells and overhead tanks but in most of the facilities, the overhead tanks are in poor condition. Some times the bore well are not active and sometimes the water is not safe for drinking. The construction of the centre is defective at many places. Problems such as leaking of roofs, non-closing windows, and broken floors are not uncommon. The maintenance of cleanliness and hygiene in the health institutions is extremely neglected. Even operation theatres and delivery rooms are not in clean and hygienic conditions. Toilets are always unclean, ill maintained, and in many institutions (CHCs, PHCs and SCs) non-operational.

For delivery of high quality services to the community, it is essential that a health centre have such basic amenities as appropriate building, electricity, water supply, and adequate space. A study carried out in Rajasthan for End-of-Project Evaluation of UNFPA Project Phase II (Gupta, et al. 1996) observed that at sub-center the buildings are in dilapidated condition and do not often meet the standard norms. The Government of Rajasthan (GOR) conducted the Concurrent Evaluation of RCH care in Rajasthan during 1996-97, observed that out of 930 sub-centers covered under the study from the state (including all district) only 37 and 41 per cent of sub-centres have electricity connection and water supply facilities respectively. In Udaipur district, out of 30 sub-centers covered in the study, revealed that only 10, 37 and 40 per cent have water supply, residential quarters for staff, and electricity connection respectively.

Building maintenance is very poor and as a result, the infrastructure is not maintained. Even minor repair is not executed which is the main contributing factor to the poor condition of the buildings. The district officials opined that a major problem in case of sub-centers is with the location (SCs are often placed far away from the villages/ market places) particularly in tribal blocks of Kotra, Dhariyawad, Kherwara and Gogunda, which results in low attendance rates and absentees of staff due to insecurity in the isolated areas. This results in poor contact of the health worker with the community and affects the continuity of services, follow-up of the clients, interpersonal relations between clients and providers.

Drugs and Supplies: The routine supply of essential drugs to the health facilities in the district seems to be sufficient. The state government purchases drugs and supplies for the district from non-plan funds. The drugs are provided by the state government to the district, based on the demand received from the district. The district officials compiled it on the basis of health institutions' demand. These are supplied to the districts. The CMHO decides the quantity of various drugs to be supplied to CHCs, PHCs and sub-centres. The drugs and supplies are usually distributed every month to the health facilities. Shortage occurs sporadically due to procurement problems or mismatching of supplies from the district to actual local needs at the CHC/PHC/SC level. Distribution problem occurs particularly during transfer of drugs from the PHC to sub-center level. The sub-center has to collect the allocated drug supplies from the PHC, through a process, which is often impeded through long distances, lack of transport, and geographical situations of district in tribal areas.

The medical officer in-charge of a PHC has a small fund at their disposal for purchasing additional essential drugs from the private market for emergency situations. The annual emergency drug fund at CHC level on an average is Rs. 4000 per month. It was also found that CHC/PHC are supported with additional drugs by the private donations (rich families from the local villages). Drug donations, however, are irregular and not coordinated with the general supply procedures in the district.

The quantity of drugs to be distributed free-of-charge from various institutions has been doubled in the Eighth Plan in the state (GOR, 1990). In the state government budget for the year 1995-96 the budget for the health department has been increased by about 175 per cent,

which means that, the availability of drugs at the PHCs and SCs is adequate (Srinivashan, 1996). GOI financed schemes also pay for drugs and supplies for specific programmes such as Family Planning and MCH. This shows that the district is getting appropriate and adequate drugs and supplies of contraceptives required to run the programmes. A study of four states of India conducted by World Bank clearly indicates that the supplies are more adequate for vaccines/ supplements and contraceptives (World Bank, 1996). The study of Rajasthan state by GOR observed that a majority of SCs (85 per cent) have supply of contraceptives, and in case of Udaipur district, a majority (83 per cent) have the supply of contraceptives (GOR, 1997).

Equipment: It was revealed during the discussions with the district officials that the medical equipment at health care institutions in the district are not in adequate quantity compared to norms for providing quality of care. In most of the health institutions, equipment are either in poor condition or requiring maintenance. The sub-center plays an important role in providing the services in rural and tribal areas. The sub-centers are the first contact points of most of the clients in the rural and tribal areas. A client who demand maternal health services and family planning, first contacts the health worker at the sub-center level for necessary services. Therefore, these sub-centers should be equipped with basic equipment to provide services. However, it was found that the equipment at sub-centers are not adequate. The Concurrent Evaluation of RCH care in Rajasthan during 1996-97 observed that out of 930 sub-centers covered from the state under the study (including all district), only one-third have infant weighing scales, examination kit, delivery kit and urine examination facility. It was found in case of Udaipur district, out of 30 sub-centers covered in the study, about 43-53 per cent have infant weighing scales, examination kit, delivery kit, and 17 per cent have urine examination facility. This situation affects the adequate antenatal care in rural areas.

IEC Material: The IEC activities are important for demand generation of reproductive health services. The district has received sufficient funds under India population project (IPP)-IX for organizing various IEC materials and getting appropriate amount of IEC materials (posters, pamphlets, printing materials, and *Niramaya*, a magazine published by the Directorate of Medical, Health and Family Welfare, Government of Rajasthan).

106 Diagnosing Quality

Finance: The Government of Rajasthan allocates approximately forty per cent of its total budget for Social Service sector which includes education, medical health and family welfare, sanitation, water supply, housing, urban developments, and welfare of scheduled caste and tribes. The health sector ranks second in terms of budget allocation following the education. The budget estimates for the medical and health department are usually presented in three categories: Non-plan, Plan and Centrally Sponsored Scheme (CSS). The share of salaries and wages constitutes 65.3 per cent and 72.3 per cent of the total expenditure for the years 1995-96 and 1994-95 respectively at the state level (Budget Documents, DM&HS). This reflects, similar to most of the other states, exorbitantly high recurring administrative costs.

The problems in the state are as well reflected in the scenario with respect to the health care financing in the study district. Due to concentration of tribal population in the district, the GOR as well as the GOI have special interest in the socio-economic development of this district. It received the following budget (Table 7) during 1995-96 and 1994-95, which is quite low, in spite of the fact that the health status of the district is poor in comparison to that of other developed districts.

Table 7: Revenue Expenditure for Medical, Health and Family Welfare in the District Million Rs.)

Particular	Non-plan (1995/6)	Plan (1995/6)	CSS (1995/6)	Non-plan (1994/5)	Plan (1994/5)	CSS (1994/5)
Medical & Health	45.83	21.56	3.40	43.27	20.52	2.10
Family Welfare	0.25	1.96	26.00	0.22	0.69	33.20
Total	46.08	23.52	29.40	43.49	21.21	35.30

Source: Budget Documents DM&HS, GOR, 1991-95.

Clients: Clients are very important inputs in health care system. Clients in the present system have been defined as narrowly as "15-45 years married eligible women". This definition is not adequate for reproductive health approach. The RH approach focuses on assisting individuals of any age group in meeting their personal reproductive health goals. Moreover, to provide quality of care to clients of FP services, informed choice is one of the element of quality, which says that clients inputs are very much necessary for the provider. Again, the provider has to provide complete information to the clients before providing the services. For this, the provider

has to get an assurance the clients by asking whether they have understood properly or not about the services. Clients' satisfaction is also necessary for providing quality of care. It was observed from the concurrent evaluation data that the providers are not using effectively and efficiently the clients as input. However, as per the discussion with the district level officials, it is highly manipulable for improving the quality of care in the district.

From the above analysis it is clear that there are various input factors, which have contributed to the current level of the quality of care of reproductive health services in the Udaipur district. But, all the factors are not at the same level of Importance, Favourability, and Manipulability. Table 8 provides an analysis of these factors in terms of their Adequacy (the extent to which the factor makes a positive contribution), Importance (how important the factor is in influencing the quality of care), and Manipulability (how easy it is to influence the factor). The scoring of Adequacy and Importance are done on the basis of findings of other researches reported in the literature, data collected from the district and the researcher's intuitive judgment, and of the Manipulability on the basis of discussions with the district level officials. The rating for each factor has been done on a five-point scale (1-5), where 1 denotes the lowest value and 5 denotes the highest value. A system of rating is used so that no more than 20% items secure the same score. This is done to ensure greater degree of discrimination in scoring.

Table 8: Assessments of Inputs

Factors	Important	Adequacy	Manipulability
Quantity of Doctors at CHC/PHC Level	3	3	3
Quantity of Staff at SC Level	3	4	1
Filled Positions of Personnel in Tribal Areas	5	1	4
Manpower Trained in Interpersonal Relations	5	1	4
Quantity of Health Facilities	4	4	1
Basic Amenities at Health Facilities	3	1	2
Location of Building in Village	2	2	1
Regular Supply	2	3	2
Distribution	1	3	3
Minimum Necessary Equipment	4	3	2
Maintenance of Building/ Equipment	1	2	3
Clients	4	2	4

INFORMATION

The fourth component of Jain's Diagnostic Model is Information. The manager needs up-to-date, reliable, and complete information on all the other components (DO/AO, Environment (ENVR), Inputs, and Process) of the system, in order to make well-informed management decisions about the performance and operations of the program for effective management of the system. This permits the system to adjust, to cope with, and to benefit from all new developments. Comprehensive, accurate, and sensitive information is vital not only for the effective and efficient functioning of the system, but also for its very survival. It should constantly and accurately monitor all developments in all components of the system and transmit all relevant information to all concerned parties.

The manager relies on information generated both inside the system (internal) and outside the system (external). The information is communicated through formal (officials) and informal (unofficial) channels. The managers rely on both informal and formal ways of obtaining the information they need to make decisions. Informal information includes rumours and unofficial discussions with colleagues. Personal experience, education, common sense, intuition, and knowledge of the political and social situation are also part of the informal means of gathering information. In contrast, formal information usually reaches managers in the form the routine statistical and management reports.

- **Internal Formal** These reports, which are generally standardized in format and produced on a regular basis, constitute the most visible part of what is called the management information system (MIS).
- **Internal Informal** Peers, subordinates, superiors, rumours, gossips
- **External Formal** Publications (journals, newspapers), Conferences, Concurrent Evaluation Report, Census reports, research report, reports by other departments of concern (Education, Women & Child Development, etc.), students working on the same problem, and mass media reports, etc.
- **External Informal** Outside members [physicians, customers, suppliers, bankers, persons in associated organizations, non-members (outside business and professional associates), others (chance encounters, neighbours)].

The relative importance of these channels varies greatly from program to program, culture to culture, and time to time.

Information needs: The system needs information on all other components of the system to make decisions about planning, monitoring and evaluating the quality of services. The system needs information about the current level of performance with respect to desired output; about the environmental situation contributing to the achievement of the DO, about inputs situation to achieve the DO, and about the processor and the processing parts of the system to achieve the DO. The system needs information on quality of care elements: method of choice, information given to clients, interpersonal relations, technical competence of provider, follow-up mechanism for continuity, and appropriate constellation of services.

Types of available information: The type of information that is currently available through monthly reports of PHCs are as follows: eligible couples contacted, operations done (vasectomy and tubectomy); sterilization cases followed up (contacted up to previous month, complications reported, deaths); IUD insertions; IUD cases followed up (contacted up to previous month, complications reported, discontinued IUD; Oral Pills cycles (total women on pills at the beginning of the month, total women initiated to pills during the month, total women reported complications, total discontinued during the month, distributed by PHC); *Nirodh* (condom distributed through public health system) pieces distributed; Medical Termination of Pregnancy (MTP) done (number of MTPs, follow up after MTP, complications reported, acceptors of FP methods).

The above-mentioned information is generated at the SC level and transmitted to the PHC level at monthly intervals. At PHC level, the Medical Officer In-charge sees the performance of the SCs and compiles a detailed report incorporating the PHC performance, and the same is transmitted to the Block PHC. At block PHC, a detailed report is compiled, including the performance reports received from PHCs, and the same is forwarded to the district level.

Monthly reports are a very important tool of monitoring the program. They provide data, which can be converted into useful information for monitoring not only the physical progress but also the quality of the program. However, these monthly reports do not provide

110 Diagnosing Quality

information on the quality aspect. If accuracy and timeliness of the reports is ensured at supervisory levels, this can become the most effective method of managing the program. The reports lose their effectiveness as a monitoring tool if these are not analyzed in time by superiors to provide feedback to the subordinates. In the existing MIS, the staff at the SC level is overburdened with record keeping, and spends about 30 per cent of the office hours in maintaining the records. Registers are available to collect and record the information at the SC level for each village. The registers are kept at SC level. The report formats are available for each level, i.e., SC and PHC level. The registers are available with almost all the SCs. However, these are not updated regularly, which leads to incomplete and inadequate information for programme planning and management. The Concurrent Evaluation of Reproductive Health and Child Care in Rajasthan conducted by GOR during 1996-97, observed that out of 30 SCs from Udaipur district covered under the study, about 27 per cent of the ANMs were not making correct entries in the service delivery register and about 50 per cent were not sending correct monthly reports to the PHC level. This reflects the extent of inadequacy and inaccuracy of the data available to the system manager in the district, which leads to lower quality of data for appropriate planning and management available to the system manager. Analysis and use of data for problem assessment, problem solving and planning purposes is not performed at any level in the district. Feedback to the primary level is not provided on the data they submit. It leads to falsification of data transmitted from lower level to higher level. Records are not maintained to monitor and follow-up referred patients.

However this information is also not sufficient with respect to the quality of services. DM&HS, GOR, initiated some efforts to prepare and compile a demographic database at the district level on the basis of information collected by ANMs for ECRs. The same was prepared by an independent agency for all districts of Rajasthan. For Udaipur district, it was found that the information was grossly inadequate and incomplete on the following aspects of ECR: immunisation of children, type of assistance at the time of delivery, childhood mortality, satisfaction with the family planning method being used by the couples (Goyal et al., 1996).

Another problem with the existing information system is that it provides data on maternal deaths only on the basis of hospital records. But, in

Udaipur district, a majority of the population is characterized by tribes living in rural and remote areas in hilly and forest regions, facing the problem of inaccessibility of health services. Hence, most of the maternal deaths go unreported, as the programme is not responsive to the other sources of information like, NGOs, the community, private medical practitioners, media, etc. Therefore, it can be concluded that the figures of the deaths due to reproductive health matters in the district are not realistic and adequate, timely, and accurate. The records and reports are part of a ritual rather than a useful tool. The reports are not analyzed and interpreted for decision-making at the local level, not even at the district level.

The concurrent evaluation generates some information needed by the system for monitoring quality of services, i.e., method of choice, information given to clients, interpersonal relations, technical competence of provider, follow-up/mechanism for continuity, and appropriate constellation of services. However, the concurrent evaluation provides limited information on these aspects. It is conducted by DM&HS, GOR, in each district of Rajasthan on a quarterly basis, with the help of external agencies. However, the evaluation does not provide any information on environment, and very limited information on other parts of the system. The system may generate information through external informal sources, but it was found through discussion with key personnel in the district that it is not adequate, though it may be very useful.

From the above analysis, it is clear that there are various factors in the information component of Jain's Diagnostic Model, which are influencing the quality of care in Udaipur district. But, all the factors are different in terms of their adequacy, quality, importance and manipulability. Table 9 provides an analysis of these factors in terms of their adequacy, quality, importance and manipulability. The rating for each factor has been done on a five-point scale (1-5), where 1 denotes the lowest value and 5 denotes the highest value.

112 Diagnosing Quality

Table 9: Assessment of Information

Factors	Important	Adequacy	Quality	Manipulability
Service Statistics Reliability	5	3	3	5
Comprehensiveness	4	1	1	4
Eligible Couple Register	2	2	2	3
Concurrent Evaluation	3	4	4	2

Process

The fifth box in Jain's Diagnostic Model is the process. It is the most important box. The desired output (DO) is achieved through process. It achieves the DO by manipulating all other boxes. It has the following two components: *Processor*, and *Processing System*.

Processor: The key players of the system, who are in a position or have the power/ authority to achieve the DO, are called processors. In the present study, the processors are identified at three levels: district, block, and SC levels. The CM&HO, the Deputy CM&HO (FW), and the MCH Officer, together are responsible for planning and implementing different activities of the RH services at the district level. At block (PHC/CHC) level, the Medical Officer In-charge is the processor, and at the SC level, the ANM. The characteristics which influencing the processor in processing is measured by the three Cs: *Concern for quality services*; *Competence for providing quality services*; and *Continuity with the system*.

Concern for Quality Services

The concern for quality of care may be reflected from two elements of quality of care framework: choice of method and information given to clients. The concurrent evaluation revealed that in Udaipur district only 57 per cent of the clients were given a method choice at the time of adopting the FP method, only 5 per cent were told about possible side-effects, 2 per cent about both the advantages and disadvantages of the method, 12 per cent were advised about periodic-check ups, and 8 per cent on proper breast feeding. This shows low level of concern for providing quality services. Only 16 per cent of the spacing method users were told about regular follow-up visits, and only 1 per cent of the spacing method users were told about to report the health worker in case of side effect. Also shows that about 49 per cent of the current users of spacing methods received

a follow-up visit by the provider within a month, and about 79 per cent of the sterilization clients received a follow-up visits after adoption of the method. In case of maternal health services, only 12 per cent of the women received at least three visits during their antenatal period and about 27 per cent of them received a follow-up visit by health worker during the post-natal period within a week after delivery.

The low concern for quality of services is also reflected in the fact that, many a time, the PHC medical officer working in remote areas visits the PHC only at long intervals to get his salary. The general attitude among the workers and the doctors is that they are servants of the government, and so responsible for serving their supervisors rather than clients. The incumbent at each level tries to keep his supervisor happy, rather than support his subordinates in their functions to serve the clients. Practically, this tantamounts to neglect of the clients, compromising safety standards in performing procedures, and, at times, work done only on paper. At each level the processor almost never discusses the quality of care in any meeting, reflecting the low level of his concern. They discuss only targets and achievements of targets.

In case of infrastructure problems, they are not only those of civil engineering and physical maintenance, but also of attitude, habits, and behaviour, which reflect the lack of concern for quality of care. This does not require much by way of additional resources. However, it requires the concern of the staff for quality. There are instances of excellent maintenance, where the doctor in-charge in particular has taken keen interest in ensuring it. Hence, lack of systematic management as well as individual initiative contribute to the poor infrastructure facilities in the Primary Health Care system.

Competence for Providing Quality Services

The processor requires certain competencies, technical and behavioural, for providing quality services. The district level processor should be competent to manage various aspects of competence i.e. competence of the clinical technique of providers, the observance of protocols, and meticulous asepsis required to provide clinical FP methods and SM services. Discussions with district level officials revealed that they do no practice any method to manage the above competencies, that is, they are not competent. To assess the competence of medical officer and ANM, the

data used is based on whether the provider offered services that are expected as part of a competent service (as defined by an obstetrician/ gynecologist, rather than by the actual quality of the services provided). In terms of measures of technical competence in case of family planning services, whether the provider inquired about the clients' health problems and menstruation status at the time of adoption, and whether the provider had performed the necessary examinations, are taken into account. Only 36 per cent of the clients were inquired about their general health problems, and 22 per cent about their menstruation cycle, before providing the method. Moreover, 21 per cent clients reported that blood pressure was taken by the health worker at the time of adopting family planning method, and by 22 per cent that vaginal and breast examinations were performed at the time of adopting the family planning method.

The technical competence of the provider, in case of maternal health services, is assessed on the various activities the worker is expected to perform for a pregnant woman for better care. These include: i) taking medical history (obstetric history, general health, weight & height, calculating expected delivery date (EDD), and assessing risk factors); ii) examination (general physical, obstetric and edema), and iii) inquiring about bleeding/ pain in abdomen. Only 3 per cent of women reported that obstetric history was taken, only 5 per cent that general health problems were inquired about, about 42 per cent that weight and height were recorded, about 40 per cent that EDD was worked out, and 40 per cent that risk factors were assessed for them during the antenatal period. Moreover, 57 per cent of the women reported about general physical examination, 8 per cent about obstetric examination, and 61 per cent about edema examination, having been performed by the health worker during their antenatal period. About 68 per cent of the women reported that they were inquired about bleeding/ pain in abdomen during the antenatal period.

Continuity with the System

Continuity means the length of service of the processor. It is an important quality for system's better performance, since, if the processor is changed, every thing would change, i.e., DO, strategy, plan, etc. Discussions with the district level officials revealed the high political interference in posting and transferring officials and even in changing the portfolio of programme managers. All these activities in the district affect the quality of the processor

in managing and monitoring the programme. The person who has had good years of experience in one programme gets suddenly transferred to another programme. This shows ineffective planning at the district level for posting and transfers.

Table 10: Assessment of the Processor's Characteristics (3 Cs)

Processors	Important	Concern		Competence		Continuity		Average	
		CS	M	CS	M	CS	M	CS	M
CMHO	3	1	3	1	2	3	1	1.6	2
Dy. CMHO (FW)	5	2	4	2	5	4	2	2.6	3.6
MCHO	5	2	4	2	5	2	2	2	3.6
MOIC	4	2	4	2	4	3	2	2.3	3.3
ANM	4	2	4	2	5	4	2	2.6	3.6

Note: CS denotes current status and M denotes manipulatory

Processing System is a function, which achieves the DO by manipulating all other boxes. Processing is performed by various processors to achieve the DO. The processing system has two parts: a) manipulation of all components of the system; and b) implementation.

Manipulation of the DO

The processor could not manipulate the DO in the district. He received the feedback report from the state government about the quality of services being provided in Udaipur district, but did not make any special efforts to improve the services. The DO can be manipulated first by clarity of the DO and then by setting measurable indicators.

Manipulation of Environment

Manipulation of environment relates to the processor's efforts in making the hostile factors less hostile and friendly factors more friendly towards improving the quality of services. In manipulating the environmental factors, the processor has not been able to manipulate effectively the policy changes of the Government of Rajasthan, which have influenced the programme at the district level. Processor started to involve PMPs and NGOs in providing the services. However, the focus should be on quality services, which can be influenced by involving and training PMPs and NGOs in quality of care. The Processor has not been successful in manipulating community participation, collaboration with NGOs, and inter-sectoral linkages

116 Diagnosing Quality

effectively. The funding agencies are in favour of providing funds for quality improvement, but in the district, the processor could not generate additional funds for quality improvement.

Manipulation of Inputs

Regarding the manipulation of inputs in terms of manpower, the processor has somehow been able to influence this factor. Still, the tribal people are served poorly in spite of the fact that the government is expected to provide additional assistance to these areas for improving their health status. The processor has not been able to manipulate the location of these health facilities effectively. With regard to equipment, the processor has not been able to obtain it in adequate quantity from the state government. Udaipur district, as part of the Tribal-Sub Plan (TSP), receives special attention from the central and state governments for improving the socio-economic status of the community. The Tribal Commissioner, who is stationed in Udaipur, has some funds earmarked for health care activities. The Tribal Commissioner also supports projects related to MCH-FW, undertaken by NGOs working in tribal pockets. In 1995-96, about 10 per cent of the tribal development budget was spent on health measures, mainly for renovation of health facilities and purchase of equipment/drugs. Even this could not be mobilized by the processor properly due to lack of co-ordination between the two offices. The clients are very important inputs in providing client-centered quality services. However, the processors could not manipulate them effectively. Clients' involvement can be increased in various forms to improve the quality of the services.

Manipulation of Information

Manipulation of information relates to setting up of a system of providing timely, reliable and accurate information, and use of the information in making corrections to achieve the DO. The processor has failed to manipulate the information favourably. Under the UNFPA Project, a computer was installed at the district level in Udaipur district. However, the processor could not manipulate the existing computer for data processing, storage of data and monitoring for the program. The information can be manipulated by using service statistics in data analysis at each level and making corrective actions. Monitoring of quality indicators may be done in

the district. Establishing a mechanism for verification may strengthen the existing system of data collection. Moreover, the monthly meetings at block level, which are attended by the district level officials, may be used for monitoring the quality, rather than making them a mere ritual.

Manipulation of Processor

There is evidence that the district level officials participated in training programmes focused on leadership, management concepts and methods for improving quality of reproductive health services. However, the processor at district level seems to be less competent in managing quality of care. The processors may be manipulated by providing training on planning for quality, the development of objective for quality, setting standards (including guidelines, protocols, etc.), actively communicating standards, developing indicators, setting thresholds, collecting data to monitor compliance with standards and applying solutions to improve reproductive health of the community.

Table 11: Assessment of Processing
(Manipulation of all components)

Manipulation	Important	Current Status	Manipulability
Desired Output	5	1	5
Environment	3	2	3
Inputs	3	3	2
Information	4	2	4
Processor	5	1	5

Implementation Issues Implementation includes many aspects, such as: prevalent strategy and its soundness, implementation, planning, operation management, monitoring, motivating, etc.

Prevalent Strategy and Its Soundness

After careful search of government documents and discussions with the officials, who are directly involved in planning and implementation of reproductive health services in the district, it was observed that there is absence of a strategy for improving quality of care in the district. For improving quality of services, a sound strategy should be in place.

118 Diagnosing Quality

Implementation planning

There is no plan as such for providing quality of care. In Udaipur district, RCH plans have been developed for 1995-96, 1996-97 and 1997-98. The planning process was initiated at the village and sub-centre levels aggregated at the PHC level for respective areas, and summarized in the district plan for family planning and maternal health services. This exercise is mainly putting together a set of data and information with regard to population, coverage and achievement of services. Targets for the plan year are identified. At the district level, an IEC plan is also formulated for communication and information planning. These are not focused on the quality of care. No training plan is developed in the district for the staff to provide quality services.

It has been observed that the system conducts the Eligible Couple Survey during April-June of every year, which is carried out by ANM as a ritual. Though, on the basis of the data collected in the survey for each village, the Health Worker prepares a service delivery register. The need for FP and MCH services was assessed during the survey, and the couples were divided into the following segments, and entries in the service register made accordingly: (1) couples who are current users of spacing methods and couples who have "unmet need" for spacing methods (couples who do not want a child for a period of two years and above); (2) Couples who have "unmet need" for limiting methods (couples who do not want more children); (3) couples who have two or more children but are not inclined to adopt any method; (4) couples who need ANC services; and (5) couples who need PNC Services.

Monitoring

Effective monitoring is key to success of a programme. The monitoring of the programme is expected to be done in three ways: supervision through field visits, reporting meeting and periodical meetings. Field visits by supervisors are intended to supervise the work of the field functionaries by superiors, help them overcome problems in effective discharge of their functions, reviewing the performance and giving them guidance and support to improve and also to interact with the community to assess the satisfaction level of services provided. To achieve this, the following norms are prescribed for field visits: the MCH Officer and Dy. CM & HO (FW) are

expected to visit at least 3 poor performing PHCs, 5 SCs and 2 PPCs in the district to have on the spot assessment of the activities, find out service delivery gaps and take corrective actions. During these visits, the service delivery in inaccessible and remote areas be monitored closely with the concerned MOs responsible for this. Both the officers should visit the poor performing institutions and after ascertaining the reasons for poor performance, should take corrective steps to improve performance during the next month. This visit must result in improvement of performance by the next month. At the PHC level, the medical officer in-charge is expected to pay a surprise visit to one or two sub-centres each month to supervise their activities, and also for interacting with the community, Jan *Mangal* volunteers and *Sarpanchas*.

The block health supervisors (male and female) are expected to visit at least 15 villages with low couple protection rate or high IMR & MMR as per the IEC action plan per month and carry out intensive IEC activities. The Education and Publicity Officer (EPO) is expected to participate in the activities of at least 10 villages per month along with block extension educator (BEE) & block health supervisor (female) BHS (F) in the villages having resistant populations. This monitoring is also not being performed regularly in the district due to shortage of health supervisors (male and female) and the EPO not having a Jeep for traveling, though he can use the Matador for this purpose. But, this is not convenient in the district due to its geographical situation.

At the district level, there is no arrangement for evaluation of the quality of services being rendered by the health care institutions in the district. Therefore, in the existing system, the monitoring and evaluation of the program performance in terms of quality of care is totally absent. The district health system has to conduct rapid assessment methods to know the status of quality of care.

Co-ordination

There is poor co-ordination among CM&HO, deputy chief medical & health officer (Dy. CM&HO) (FW) and MCH Officer in providing quality services. Since all services are delivered in an integrated package, due to poor co-ordination among the district level processors, the processors at the PHC and at the SC levels are unable to provide quality services. Furthermore,

120 Diagnosing Quality

lack of linkages and co-ordination between primary and secondary level institutions in the district leads to poor referral.

Motivation

There is no harm if the providers do not provide quality services, and no reward is if they do. Therefore, to improve the quality of services there should be well-established risk (for not providing services, as per quality standard) and rewards (for providing services as per quality standard).

The following table depicts the importance, current status, and manipulability on a five point-scale of each of the factors related to implementation.

Table 12: Assessment of Processing (Implementation Issues)

Implementation Issues	Important	Current Status	Manipulability
Sound Strategy	5	1	5
Implementation Planning	4	2	4
Monitoring	3	2	5
Co-ordination	3	3	4
Motivation	4	1	5

Improving the Systems Performance

System’s diagnosis, involves a great deal of gathering, classifying, and understanding information, and contains a comprehensive investigation of the factors responsible for the current performance of quality of care, from among the five components of the model. The interaction and result of these components form the basis for the development of the strategy. These interrelated components drive the strategy. The five components simultaneously affect the formulation of a strategy and provide input to the strategy.

In each component these factors are not at the same level of; importance (in case of all five components); favourability (in case of DO and Environment), adequacy (in case of Inputs and Information), current status (in case of Processors and Processing); and manipulability (in case of all components). The model expects us to concentrate on those factors of the problem that most deserve attention and desires a focused attempt at a resolution. The first step in this direction is to select only those factors, which are highly important in influencing the quality of care (those which scored 4 or 5 on the five-point scale), irrespective of their score on

favourability and manipulability. The next step is to identify the factors (among the highly important ones) which are low on favourability (which scored less than 3 on the five-point scale) and highly manipulable (scored more than 3 on the five-point scale). By doing so, we get those factors which are highly important, low favourability and highly manipulable. Table 18 suggests that there are a few critical factors affecting the quality of care in the district, which are of high degree of importance, low degree of favourability/ adequacy/current status, and high degree of manipulability. The most important of them is the system not setting any DO for quality of care of reproductive health services. High performing systems tend to have a firm statement on the DO. Further, this statement tends to be clear, precise, measurable, and acceptable to all major stakeholders. Therefore, in the present system, the guiding strategy would be to establish a sound DO for quality of care of reproductive health services in Udaipur district, assuming the project period to be three years. To achieve this strategy, we have to set a sound DO for quality of care of reproductive health services in Udaipur district.

Table 13: Identification of Critical Factors from
Five Components of the System

Factors	High I	Low F/A/CS		High M
DO	Important	Favourability		Manipulability
Clarity of DO	5	1		5
Environment	Important	Favourability		Manipulability
Regulation for PMPs	4	2		5
Role of NGOs/PMPs in Quality Care	4	2		5
Inputs	Important	Adequacy		Manipulability
Filled Posts of Personnel in Tribal Areas	5	1		4
Manpower Trained in Interpersonal skills	5	1		4
Clients	4	2		4
Information	Important	Adequacy	Quality	Manipulability
Service Statistics Reliability	5	3	3	5
Comprehensiveness	4	1	1	4
Process	Important	Current Status		Manipulability
<i>Processors</i>				
3 Cs of Dy. CMHO (FW)	5	2.6		3.6
3 Cs of MCH Officer	5	2		3.6
3 Cs of Medical Officer	4	2.3		3.3
3 Cs of ANM	4	2.6		3.6
<i>Processing</i>				
Manipulation of DO	5	1		5
Manipulation of Information	4	2		4
Manipulation of Processor	5	1		5
Soundness of Strategy	5	1		5
Implementation Planning	4	2		4
Motivation	4	1		5

As discussed earlier, the overall indicators score for quality of care worked out to be 37, means the actual output (AO) of the system. To achieve the guiding strategy, we had set a sound DO for quality of care, which is as follows: "To achieve the quality of care at the level of 50 by the end of the project." To achieve the above-mentioned DO, we have to improve those factors, which affect the quality most. It has been seen that improving the key human resources will have the most effect. It will be enhanced through various training required for quality improvement and assurance and also by introducing a *risk-reward system* through public performance rating system, and dual record system.

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P.R. Sodani is Associate Professor of Health System in Health Economics and Financing at Indian Institute of Health Management Research, Jaipur, India.

Appendix - I

The ANM also collects data for Eligible Couple Register (ECR) every year. In the ECR, the following data are collected: 1) name of village, household number and couple number; 2) name of eligible couple: husband, wife, religion and caste; 3) age of husband and wife; 4) number of children (male and female); 5) age (in years and months) and sex of youngest child; 6) whether the woman had delivered during the previous calendar year (1 January to 31 December). If yes, the following details: where the delivery took place; who conducted the delivery; whether (Tetanus Toxide) TT vaccination was received; whether iron and folic acid tablets were received; outcome of the delivery; if child is alive, present age of the child (in months); if dead, age at the time of death (in months and days); 7) whether any maternal death happened in the household during the previous calendar year; 8) if the age of the youngest child is less than one year, then whether the following vaccinations were received: Bacillus Calmette-Guerin (BCG), Diphtheria Pertussis Tetanus (DPT) (I, II, III), Polio (I, II, III), measles and vitamin A; whether the immunization card is available; 9) whether the woman is pregnant, and if so, date of last menstrual period and expected date of delivery; iron folic acid (IFA) tablets (number); TT vaccinations (number), and status of pregnancy; 10) If the woman is not pregnant, whether the woman desires for more children If yes, when; 11) If the woman is not pregnant, whether the woman/her husband had adopted any method of family planning methods; If not, reasons. If yes, the name of the method. Whether the couple is satisfied with the use of this family planning method.