

The Quality Gap in the Services Provided by Rural Maternity Units in Southeast of Iran

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Background: Providing high-quality maternity services is crucial to increase utilization of these services and reduce maternal mortality. The quality of the maternity services provided to pregnant women in rural areas of Iran is poorly understood.

Objectives: This study aimed to investigate the quality gap in the maternity care services provided by Rural Delivery Facilities and Safe Delivery Posts in Sistan and Balouchestan Province, southeast of Iran, as expressed by the difference in women's perceptions and experiences of services.

Patients and Methods: In this cross-sectional study a total of 438 pregnant women who gave birth in rural maternity unit were recruited between February and May 2013. The SERVQUAL questionnaire was used for data collection. The Wilcoxon Signed-Rank test was used to compare the quality gap as expressed in the mean of differences in the expectation and perception scores. The quality gap was compared between demographic groups using Kruskal-Wallis tests.

Results: There was a negative gap in all dimensions of the quality of services provided. The highest quality gap was found for the reliability dimension followed by tangibles, empathy, assurance and responsiveness. The participants' age, levels of education and the type of maternity unit were found to be associated with the clients' perceived quality of services.

Conclusions: The quality gap in the services provided by maternity units showed that these units are not able to meet pregnant women's expectations completely. The negative quality gaps can be used as a guideline to improve the maternal health care quality and reduce maternal mortality, particularly in high-risk women such as those living in rural areas.

Keywords: Iran; Health Care Quality; Maternal Health Service; Birthing Center

1. Background

Quality in healthcare is a result of interplay between the client and the care provider and it is also influenced by factors related to the healthcare system, and the broader environment (1). High-quality primary healthcare is crucial to improve health outcomes of general population, particularly in terms of reducing maternal mortality. Better health outcomes will be achievable through improved access to appropriate healthcare services, reduced health inequities in the population and providing cost-effective healthcare (2). The quality of service has been defined as the attributes that determine the client's experience of care received beyond technical competence of care providers (3). Quality problems are usually reflected as underutilization, overutilization, and sometimes misuse of services (4). One of the factors with a powerful influence on the utilization of services is patients' perception about service quality (5).

Evaluation of healthcare quality on a regular basis is the key to identify small scale interventions that are likely to

bring about improvement on a large scale. Patient perceptions are commonly used to measure quality of care in a variety of healthcare settings (6). Perceived service quality has been defined as the difference between client's expectations of service and perceived service (7). Customer dissatisfaction occurs when the performance of health care system is lower than client's expectations which results in a perceived quality that is less than adequate (8).

Studies of overall birth experience as an important outcome of birth and women's perceptions on care are progressively used to assess and expand maternity care services. Even though there is a great interest in measuring patient's perceptions and satisfaction, only a handful number of validated tools for measurement of satisfaction with maternity care, such as the intra-partal-specific quality from the patient's perspective questionnaire (QPP-I), six simple questions (SSQ), or perceptions of care adjective checklist (PCACL-R) have been developed (9). Those instruments that are used for mea-

surement of service quality are not based on the main theoretical models of satisfaction (9). Parasuraman et al. proposed a list of five dimensions (i.e. tangibles, reliability, responsiveness, assurance and empathy) as determinants of service quality (8). The SERVQUAL instrument which is probably the most cited and accepted measure of service quality has been designed to measure the gap between expectations and perceptions of service quality in these five dimensions and it is one of the methods that has been widely used in several clinical (10) and primary health care (11) settings to quantify the service quality.

Providing skilled birth attendance as well as access to emergency obstetric care have been considered as the main strategies to reduce the maternal mortality (12). Since the establishment of the primary health care (PHC) system in Iran, the country has witnessed an improvement in all aspects of the population health including a significant reduction in total fertility and population growth rates (13). Following this demographic transition, the maternal mortality ratio in Iran has dramatically declined to a rate comparable with developed countries (14). Encouraging hospital deliveries has been one of the main strategies implemented by the Iranian Ministry of Health to reduce maternal mortality. In the context of rural Iran, rural delivery facilities (RDFs) that are led by midwives have also been established to improve access to maternal health services, particularly the skilled birth attendance for women living in remote and rural areas, and to reduce the gap between maternal health outcomes in urban and rural areas. Women who receive services provided by midwife-led maternity units are less likely to experience pregnancy-related maternal and/or fetal complications (15), which further highlights the importance of nonhospital birthing units. The contribution of midwife-led RDFs to the maternal health in Sistan and Balouchestan, southeast Iran, has been substantial, as more than 13000 deliveries per year take place in those units. However, the rate of home deliveries in some of the provinces of Iran such as Sistan and Balouchestan, with a relatively high maternal mortality ratio, is disproportionately higher than the average national rates (29.7% versus 3.6%) (16). In order to reduce maternal mortality, putting emphasis on providing quality maternity care to disadvantaged pregnant women living in remote and rural areas is of great importance. Despite some improvements in the availability of and accessibility to maternity services, the poor quality of services, especially in rural areas, could be a barrier for some pregnant women to utilize the services provided by maternity units. Moreover, high-risk pregnancies are quiet common among those women and they are less likely to utilize the services provided by maternity units (17). To our best knowledge, no studies in Iran have addressed the issue of the quality of services provided by rural maternity units.

2. Objectives

Given that pregnant women's perception about maternal service quality shapes their confidence with regard to use of the available delivery facilities, the present study aimed to assess service quality in rural maternity units in Sistan and Balouchestan Province, southeast of Iran and to identify the areas requiring improvement.

3. Patients and Methods

3.1. Study Population

This cross-sectional study was conducted between February and May 2013, in Sistan and Balouchestan Province, southeast of Iran. A multi-stage cluster sampling method was used to recruit study subjects from 25 maternity units with more than 100 deliveries per year. Those units with less than 100 deliveries per year were excluded because they were not providing services all year long and this was mostly due to short-staffing. The maternity units included 23 RDFs and also 2 safe delivery posts (SDPs) located in the outskirts of the Zahedan City. Practically, SDPs are similar to RDFs except that they have been established to offer maternity services to the under-privileged population living in an urban setting (17). A pilot study that was carried out for estimation of parameters needed for sample size calculation resulted in a $\delta = 10.88$ and $d = 2.17$ for differences in the expectation and perception scores. For an $\alpha = 0.05$ and $\beta = 0.2$ after taking into account the effect of sampling method and study design the final sample size was determined as 440 subjects. All pregnant women attending the above-mentioned maternity units to give birth were approached. Those with a good general condition and willing to take part in the study after receiving their consent were included in the survey. The number of subjects approached from each maternity unit was determined using probability proportional to size based on the number of deliveries reported from that unit during 2012.

3.2. Data Collection

A 27-item structured questionnaire was used for data collection. The study questionnaire comprised 2 parts: the first part included 5 questions on socio-demographic characteristics of the study subjects. The second part included the SERVQUAL questionnaire which was used for assessing the quality gap of services provided by maternity units. The questionnaire was composed of 22 items categorized into 5 service quality dimensions. These dimensions have been described as follows (18): Tangibles are defined as the appearance of physical facilities, equipment, personnel, etc. Reliability is the ability of service providers to perform the promised service accurately and consistently. Responsiveness has been considered as the desire to help customers and provide prompt service. Assurance is the knowledge and skills of employees and

the organization and their ability to convey trust and confidence. And finally, empathy is the closeness and understanding with individualized attention to client. These dimensions were used as a basis for a service quality measurement instrument known as SERVQUAL (19). The study questionnaire included 4 items for tangibles, 5 items for reliability, 4 items for responsiveness, 4 items for assurance, and 5 items for empathy. The SERVQUAL questionnaire has been translated into Persian language and it has been used in several studies that have investigated the quality of services in a variety of medical and public health settings. The reliability and validity of the Persian version of the questionnaire has been determined for assessment of the quality of care in primary health care centers (20).

Data collection was carried out by a team of trained health care workers during an interview. To minimize possible bias in the data collection, health care workers not working in the maternity units were recruited to undertake the interviews. The questionnaire was administered to eligible women twice, the first before receiving services and the second at the time of discharge. In order to assess the study subjects' expectations, the SERVQUAL questionnaire was completed by interviewing the participants before receiving services at the time of admission to the maternity units. Exit interviews (i.e. at the time of discharge) were carried out to complete a second SERVQUAL questionnaire to evaluate the subject's perception of the services. The responses to the questions included 5-point Likert scale options ranging from "very good" to "very bad". Each question could have a maximum score of 5 for "very good" to a minimum of 1 for "very bad" options. The scores for the 5 dimensions: tangibles, reliability, responsiveness, assurance and empathy were calculated by adding up scores for questions 1 - 4, 5 - 9, 10 - 13, 14 - 17, and 18 - 22, respectively. Hence, dimensions that included 5 questions (i.e. reliability and empathy) were given a maximum score of 25 and the rest of dimensions a maximum score of 20. With regard to the above-mentioned calculations, the maximum overall score was 110. The service quality gap score for each dimension was computed by subtracting the expectation score from the perception score for that dimension.

3.3. Statistical Analysis

All continuous variables were tested for normality of distribution using Kolmogorov-Smirnov goodness of fit tests. None of continuous variables were found to have a normal distribution. Hence, nonparametric tests were used for data analysis. The Wilcoxon Signed-Rank test was used for comparing the quality gap as expressed in the mean of differences in the expectation and perception scores on the five dimensions of the quality of services. The differences in the expectation and perception scores were compared between demographic groups using Kruskal-Wallis tests. Mann-Whitney U test was used

for comparing pairs of groups, after applying Bonferroni correction for multiple comparisons. Spearman's rho correlation coefficients were used to investigate the association between expectation and perception scores for each dimension. Categorical variables were presented as counts and percentages. $P < 0.05$ was considered significant for all analyses. Data analysis was performed using SPSS version 20 (SPSS, Inc. Chicago, Illinois, USA). Ethical approval for this study was obtained from Ethics committee of Zahedan University of Medical Sciences.

4. Results

A total of 438 subjects participated in this study. Mean age was 26.4 ± 5.9 years (age range, 15 - 50 years). The demographic characteristics of the participants have been presented in Table 1. As shown in Table 2, the mean scores for expectation questions ranged from 4.02 ± 0.9 (question 4: up-to-date equipments) to 4.82 ± 2.4 (question 14: trusting the staff). The mean scores for perception questions ranged from 3.89 ± 0.9 (question 4: up-to-date equipments) to 4.68 ± 0.6 (question 17: politeness and humbleness of the staff) with a mean of all questions score of 4.51 ± 0.6 . The mean score of all questions for perception was 4.64 ± 0.9 . Our results showed that there was a quality gap in all dimensions investigated and the difference in the expectation and perception scores was statistically significant as presented by $P < 0.001$ for Wilcoxon Signed-Rank Tests. The highest quality gap relates to the reliability dimension (mean = -0.65 ± 2.4) followed by tangibles and empathy dimension (mean = -0.64 ± 3.6). The responsiveness dimension was found to have the lowest quality gap (mean = -0.45 ± 2.0). Similarly, there was a statistically significant difference between the mean of overall expectation and perception scores (mean = -2.70 ± 10.7 , $P < 0.001$).

The correlation between expectation and perception scores for each dimension was investigated using Spearman's rho correlation coefficients (Table 3). All correlations were statistically significant ($P < 0.001$). The highest correlation coefficient was found between expectation and perception scores for empathy dimension ($P = 0.675$). The assurance dimension showed the lowest correlation coefficients for the above-mentioned scores ($P = 0.544$).

The differences between expectation and perception scores based on age groups, education levels, and the type of maternity unit have been presented in Table 4. We found an overall statistically significant difference in service quality across three age groups ($P < 0.003$). The younger age group (< 18 years old) recorded a higher median difference score (median = -3.0), than, the other two age groups. We also found that the difference between younger age group with the other two groups was statistically significant ($P < 0.007$ for age group < 18 years versus 18 - 35 years group and $P < 0.001$ for age group < 18 years versus > 35 years group). Similarly, a

statistically significant difference in service quality was found across three education groups, $P < 0.001$. The highest gap was observed in the participants with primary and guidance school educations (median = -1.0). When comparing pairs of groups, the differences were statistically significant. The p values for comparing the illiterate group with primary and guidance school group, and also, for comparing the second group with

high school and university group both were less than 0.001. In comparison with RDFs, the subjects receiving services in SDPs were more likely to record a service quality gap ($P < 0.001$). Comparing the differences in quality gap between RDFs and SDPs for different dimensions, we found that SDPs were rated lower in all 5 dimensions, with the largest quality gap was related to the reliability dimension followed by the tangibles (data not shown).

Table 1. The Socio-Demographic Characteristics of the Participants (n = 438)^a

Variable	Frequency
Age group, y	
<18	35 (8.0)
18 - 35	371 (84.7)
> 35	32 (7.3)
Education	
Illiterate	191 (43.6)
Primary and guidance school	197 (45.0)
High school and university	50 (11.4)
Occupation	
Housewife	435 (99.3)
Employed	3 (0.7)
Type of maternity unit	
Rural Delivery Facility	365 (83.3)
Safe Delivery Post	73 (16.7)
District	
Zahedan	115 (26.3)
Khashan	6 (1.4)
Iranshahr	38 (8.7)
Saravan	70 (16.0)
Sarbaz	84 (19.2)
Nikshahr	60 (13.7)
Konarak	31 (7.1)
Chabahar	34 (7.8)

^a Data are presented as No. (%).

Table 2. Mean, Standard Deviation, and Median for Expectation, Perception, and the Difference Scores for 5 Service Quality Dimensions^a

Dimension	Expectation		Perception		Quality Gap	
	Mean ± SD	Median	Mean ± SD	Median	Mean ± SD	Median
Tangibility	17.8 ± 3.6	18.0	17.2 ± 2.5	17.0	-0.64 ± 3.5	0.0
Reliability	23.2 ± 2.6	25.0	22.5 ± 3.0	23.0	-0.65 ± 2.4	0.0
Responsiveness	18.9 ± 3.1	20.0	18.4 ± 2.3	20.0	-0.45 ± 2.0	0.0
Assurance	18.9 ± 3.0	20.0	18.5 ± 2.1	20.0	-0.47 ± 3.1	0.0
Empathy	23.2 ± 3.8	25.0	22.6 ± 3.1	24.0	-0.64 ± 3.6	0.0
Overall quality	102.1 ± 11.6	106.0	99.1 ± 11.6	103.0	-2.70 ± 10.7	0.0

^a P value for Wilcoxon Signed-Rank test is < 0.001 .

Table 3 . Spearman Correlation Coefficients for Correlation Between Expectation and Perception Scores^a

Dimension	Spearman's Rho
Tangibles	0.655
Reliability	0.646
Responsiveness	0.628
Assurance	0.544
Empathy	0.675

^a P < 0.001.**Table 4.** Mean, Standard Deviation, and Median for Expectation, Perception, and the Score Differences for 5 Service Quality Dimensions by Age Group, Education Levels and the Type of Maternity Unit^a

Variable	Expectation		Perception		Quality Gap	
	Mean ± SD	Median	Mean ± SD	Median	Mean ± SD	Median
Age group, y^b						
< 18	103 ± 7.8	106	95 ± 14.1	99	-8.1 ± 16.3	-3
18 - 35	102 ± 11.7	106	99.6 ± 11.4	103	-2.2 ± 10	0
> 35	102 ± 14	104	98.1 ± 10.7	98	-2.5 ± 8.7	0
Education^c						
Illiterate	101 ± 13.5	105	98.1 ± 13.4	103	-2.2 ± 9.3	0
Primary and guidance school	103.7 ± 9.4	107	99.6 ± 10.3	103	-4.1 ± 11.5	-1
High school and university	100.2 ± 11.5	102.5	100.9 ± 8.9	104	0.7 ± 11.3	0
Maternity unit^c						
RDF	101.6 ± 12.4	105	99 ± 12.3	103	-2.2 ± 11.2	0
SDP	104.5 ± 6.4	107	99.4 ± 7.7	100	-5.1 ± 7.2	-4

^a Abbreviations: RDF, rural delivery facilities; SDP, safe delivery posts.^b P value for Kruskal-Wallis test is 0.003.^c P value for Kruskal-Wallis test is < 0.001.

5. Discussion

The aim of this study was to investigate the quality of maternity care provided by maternity units in rural and under-privileged urban areas in Sistan and Balouchestan Province, southeast of Iran. Our study showed that there was a gap in quality of services in all of the 5 dimensions investigated. The highest quality gap was found for the reliability dimension followed by tangibles, empathy, assurance and responsiveness.

Although to our best knowledge, no studies in Iran have specifically investigated the service quality gap in maternity units, most of the studies that have used a SERVQUAL model to assess service quality have reported a gap in all 5 dimensions. In two studies that particularly examined women's viewpoint of quality gap in primary health care, both indicated that the largest gap was in tangibility dimension (21, 22). Other studies have reported that the largest quality gap was found for responsiveness (11) and empathy dimensions (23).

Lack of reliance in the quality of care provided by skilled

birth attendants is often cited as a key factor that gives rise to reluctance in clients to seek maternity services by birthing units (24). The reliability is thought to be the most important dimension of the quality of care (8). Although the quality of services provided is determined mainly by the process-related factors (i.e. arrangements, lowering the delay in the time care that is delivered, and appropriateness (25)), the reliability and responsiveness dimension still entails more focusing on the clients' expectations (10). Delay in admission to maternity units has also been found to be a major constraint experienced by pregnant women when they use maternity services (26). There is some evidence that birthplaces that offer reliable and patient-centered care which is characterized by attributes such as support, participation in decision-making, paying special attention to psychological needs of women, conveying needed information, and for women's feeling of being listened to, are more likely to result in a better birth experience and women's satisfaction (27).

Health-care technology enhances satisfaction with the quality of maternity care, as it diminishes the anxiety created by pregnant women's assumed lack of confidence in their ability as mothers (24). Although pregnant women may not have enough knowledge to assess whether a particular health-care technology or technical procedure is suitable for them, they may consider the availability of medical equipments as a measure of service quality (28).

It has been established that the health-care built environment which is a major element of the structure of care (i.e. tangibles dimension) can have an influence on client perceived quality of care (29). For instance, homely environments that promote acquaintance between client and care providers and those that promotes a sense of well-being, have been deemed by patients as satisfying with regard to the quality of the care received (30). Appealing health-care built environment may also result in a more favorable evaluation of service providers by patients (31). On the other hand, problems with cleanliness in the maternity care facilities were among the reasons given by pregnant women regarding dissatisfaction with the services offered (26).

Interpersonal communication skills are of great importance in patient's satisfaction (25). These skills comprise a wide range of processes such as perceived empathy and technical capability and nonverbal communication (32). We found a weak relationship between the midwives and the pregnant women we studied. This was identified through a relatively high gap in score of empathy dimension, which highlights the need to improve interpersonal communication skills of midwives working in maternity units. Our findings are consistent with the results presented from studies carried out in a wide range of inpatient and outpatient settings in Iran including health centers (11, 23) and hospitals (10).

Midwives should work towards improving their communication skill in order to advance the way they establish a rapport with patients and improve the pregnant women's perceptions about different aspects of the care they are provided with. One of best ways to address the distinctive needs, values and preference of individual patients is to improve communication skills, such as open-ended inquiry, reflective listening and empathy among healthcare providers (33). The midwives working in RDFs or SDPs need to let the pregnant women know of their health conditions, listen to them, answer their questions, communicate the required information in a simple and comprehensible way, be mindful and tend to their emotional needs and respect their values and cultural norms. This would encourage them to absorb and comply with the information they receive and also it would guarantee the intent to revisit RDFs and SDPs in future pregnancies. Once a good rapport established, these women could be encouraged to persuade other pregnant women to choose delivery facilities for a safe delivery. This in turn would result in a higher proportion of safe deliveries in long run and less maternal mortality.

Paying attention to expectations and perceptions of the minorities such as ethnic groups and those living in remote and rural areas plays an important role in the uptake of services by these groups. An excellent example is the Malabar Community Midwifery Link Service that was specifically designed to respond to the needs of Aboriginal and Torres Strait Islander pregnant women in suburban Sydney, Australia. The perception of those women who utilized the services was that the maternity service package was easy to access, provided continued care and resulted in trusting relationships (34). Moreover, non-discriminating attitudes and behavior of caregivers is a powerful factor that determines the satisfaction of women from minority communities with care. For instance, a study that investigated the immigrant Afghan women's perspectives and experiences of maternity care in Melbourne, Australia found that interactions with caregivers, their attitudes and behavior, and receiving adequate information, explanations and support from staff were the factors important in shaping women's satisfaction with maternity care (35). Conversely, women from minority ethnic groups sometimes encounter prejudice and racial discrimination and they are less likely to be treated with compassion, or to be engaged in decision making and to have confidence and trust in the care providers, which is more likely to results in underuse of maternity services and subsequently poorer pregnancy outcomes (36).

We found that the overall quality gap was associated with patients' age and level of education, which is in agreement with similar studies from developing countries such as Ethiopia (37) and Bangladesh (38). The women's level of education is not only a determinant of satisfaction with the quality of maternity services (i.e. with higher education levels, the individuals' expectations become more reasonable), but also it is found to be an important factor in increased utilization of skilled birth attendance during delivery (39).

Our study showed that the type of birthing unit has an influence on women's satisfaction with the quality of maternity services. Pregnant women giving birth in SDPs were more likely to report a quality gap in the services received, mainly in the two dimensions of reliability and tangibles. Although this needs to be further investigated, the urban setting of SDPs, substandard built-environments of SDPs as compared with maternity hospitals that women living in urban areas usually expects, staff shortage and factors related to service process are possible explanations for the observed difference. Researches show that birthplace attributes both in terms of care provider behavior and service process related factors play an important role in the clients' perceived quality of care (27).

One of the strengths of the present study was that a standard assessment tool was used for service quality measurement, which makes the comparison of the results of our survey with future studies in a similar setting more feasible. One of the limitations of the SERVQUAL model is that it only assesses the functional quality of services, i.e. the

processes by which the service is delivered (40). However, it does not capture the technical quality of services, which is the technical exactness of health care services. Moreover, pregnant women's perceptions of the quality of services is likely to vary between difference encounters. We did not collect data on the pregnant women's previous experiences with the services delivered by studied units.

In conclusion, this study identified several obstacles which must be addressed to improve the quality of maternity services in rural maternity units. In order to improve standards of care, measures should be taken that include all dimensions of service quality in order to address unmet needs of this group of potentially high risk women.

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Authors' Contributions

Seyed Mehdi Tabatabaei planned the study design and coordinated the conduct of the study. Fateme Behmanesh Pour, Sedighe Mollashahi, Zahra Sargazi Moakhar and Maryam Zaboli collected the study data and participated in drafting the manuscript. Seyed Mehdi Tabatabaei carried out statistical analysis and interpretation of the data and drafted this paper. Authors approved the final draft of the paper.

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