Assessment of Prenatal Care Process Based on Donabedian Model in Zabol City

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Abstract:
   Introduction: Evaluation of medical and health care quality is considered as gate for care quality improvement. With evaluation of quality and the way of providing care, current status can be specified and effectiveness of performed measures for promoting care quality can be understood. Donabedian model is a suitable model for evaluating care in medical and health services. Based on this model, care process is an important part of care which evaluates process of service delivery and reception in terms of technical aspect and inter-personal interaction. Current study was conducted aiming at determining status of prenatal care based on Donabedian model.
   Method: This descriptive study was conducted in 2015 on 260 women who referred to Zabol medical and health center for receiving prenatal care. Individuals were selected usingmultistage sampling method. Data collection tool included questionnaire of care providers' specifications, research units' specifications, and checklist of prenatal care process observation which was divided into two parts of technical performance and interpersonal interaction. Following data collection, data were analyzed using SPSS (Version 18) software and Kruskal-Wallis and chi-square tests. P smaller than 0.05 was considered as significant.
   Findings: Mean total score of care process was 34.68 ± 3.10. In separation of care process into technical performance and interpersonal interaction, results showed that mean score in the former part was 24.09 ± 3.07 and mean score in interpersonal interaction part was 12.71 ± 1.67. Study findings regarding investigation of compatibility of care level with optimal level showed that care process delivery status was average in 91.7% of cases.
   Conclusion: Research findings indicated that prenatal care process level in the region under study is average level. Since most pregnancy problems and even after delivery result from improper prenatal care, appropriate education for empowerment of midwives seems necessary to provide quality service to the mothers.
Keywords: prenatal care, care process, Donabedian model

INTRODUCTION

Promoting health of mothers is the fifth Millennium development goal. According to estimates of maternal mortality by UN agency group, great advances have been achieved up to now in all parts of the world regarding reduction of maternal mortality rate, but it seems that speed of the progress towards achieving the Millennium development goals to reduce maternal deaths by 75% by 2015 compared to the past year has been inadequate and slow [1].

It is estimated that in the world every minute a woman and every day 1600 women die due to complications of pregnancy and childbirth. According to the World Health Organization in 2013, roughly 289,000 pregnant women have died due to childbirth and pregnancy complications, which more than a third of the deaths were in the two countries, including India as 50,000 and 40,000 in Nigeria. Average mortality rate due to pregnancy complications in developing countries and in developed countries is 200 and 20 per thousand live births respectively. Comparison of these numbers shows significant differences in maternal health situation in these two countries [2].

Nowadays many of diseases and resulting outcomes in mothers and even infants have been identified with scientific progresses, and majority of prenatal and infancy problems originate from prenatal period. Performing some health and medical care actions at due time decelerate or stop trend of diseases and resulting outcomes so that health of mother and fetus is not threatened [3].

Consulting and increasing prenatal care not only causes timely diagnosis and screening some diseases, but also leads to control and treatment of chronic and sexually transmitted diseases in women of reproductive age. Consulting and providing prenatal services increases awareness of mothers and such actions as experiments, ultrasound, description, acid folic prescription helps health of mothers [4].

Evaluation of public health services in seven European countries on general health of 18 – 24 years old mothers showed that most needs of women at reproductive age include as follows: Mental and emotional health, genetic factors, social support, chronic diseases, infections, nutrition, physical activity, use of drugs, alcohol, smoking, risky behavior and family planning. Thus, general health services introduce prenatal care as the basic part of prenatal care. Prenatal care is care for women at reproductive age, before the first pregnancy or between pregnancies in order to ensure identification and treatment of consequences and behaviors which may put mother and infant at critical conditions [5].

To this end, by such actions as implementation of comprehensive care program and providing services such as risk assessment, screening tests, control diseases, controlling drugs and environmental risk factors, promoting a healthy lifestyle, prescription of supplements, vaccinations, if necessary, education and counseling for all women of childbearing age, it is possible to increase readiness for healthy pregnancy with the purpose of identification and changing social, behavioral and biochemical risk factors affecting health of women, and healthy pregnancy of mothers promotes health of women, infants and their families, and ultimately prenatal care causes ensuring future parents' health before pregnancy and during pregnancy [6]. Conducting high quality care is highly crucial, because high quality care, considering research findings, causes 33% reduction of maternal mortality [7].

Quality evaluation and promotion in medical and health care in a scientific way dates back to Mid-nineteenth century in England. In that time, famous nurse, Florence Nightingale, served in the Crimean War. He was the first person presenting the logical relationship between high quality nursing care delivery to wounded soldiers and reduction of their mortality rate. Actions of Nightingale were followed during the twentieth century in USA by many scientists including Kadman, Flexner, Doctor Patterson, doctor Morhedo and doctor Pine. Although each of them focused on certain aspects of health care quality, theirs studies all had a common point to provide better service quality, first of all, is it needed to assess the quality of service [8].

Various methods are used in order to evaluate quality of health care, including management development program for primary health care, reproductive health care monitoring, evaluation of service quality, standards-based approach, statistical process control, service recipients' satisfactory assessment ([9]. Of course, the most widespread model used to measure and evaluate health care quality is service evaluation based on standard structure, process and outcome [10]. This model was introduced in 1966 by Donabedian. Based on this model, the care quality assessment path starts from the structure, moving to the process (doing proper actions), and ending at outcome (doing the right things occurred). According to Donabedian model, structure means a ground in which the service is provided. Process means trend of giving and taking services and outcome means impact of services on health status of patients and people [11]. Thus, it can be stated that the employeesare the key to success of continuous quality enhancement programs. Although employee, share very little part in the quality problems, they play an important role in improving quality of care, so their involvement to achieve quality improvement is vital [12]. The process of care includes technical performance and interpersonal interaction [13].Technical performance includes application of clinical medicine in health related problems [14].Interpersonal interaction expresses interaction between clients and health staff which includes the way of communication and enabling a proper relationship and understanding and empathy with the patient. Success in

providing an optimal technique depends on creating good interaction between health professionals and the service delivery applicant [15].

Current study was conducted aiming at evaluating prenatal care process and determining the main affecting factors which reduce health service coverage for mothers before pregnancy in Sistan region. Findings of the study can help authorities and health planners to take step for material health development and promotion.

METHODOLOGY

This descriptive study was conducted in 2015 on 260 women at productive age referring to selected medical and health centers in Zabol. Non-probable multistage sampling method was used. That is, following classification of health centers in Zabol city, seven centers were selected. Then health centers were considered as the cluster. In the next stage, qualified individuals were selected using convenient method among all women at reproductive age who referred to selected health centers of Zabol to receive prenatal care. Research inclusion criteria included being Iranian and resident in Zabol, being of childbearing age, visiting health centers to receive counseling before pregnancy, having reading and writing literacy, and having the physical and mental health. Exclusion criteria included being a member of the health team, having fertility problems, being pregnant, suffering from mental illness, and using medication that might affect the psychology in the present or past.

Data collection tool included questionnaire of care providers' specifications, research units' specifications, and checklist of prenatal care process observation which was divided into two parts of technical performance and interpersonal interaction. Technical performance part of care checklist included 22 items in five parts as follows: history taking, experiments and ultrasound, immunization, recording the measures taken and the actions required, and training advice part based onprenatal care form. Interpersonal interaction part included 22 items based on interaction between care provider and research unit. Scoring for technical performance and interpersonal interaction parts was done using "done" (2 scores), "incompletely done" (1 score) and "not done" (0 score). Each option which was completely done by the health care provider took 2 scores, options which was incompletely done took 1 score, and cases which were not done took zero score. "No case option" was for each criterion which was omitted if there was no reason for doing them during care delivery.

Total scores related to technical performance part were 52 scores, and 44 scores for interpersonal interaction part. At the end, after obtaining total scores, it was calculated as parentage in order to compatibility with optimal level of care, and scores were classified at three levels: poor (0-33%), average (34-66%), and good (67-100%).

The process was as follows: following taking introduction letter, researchers referred to the centers and observe prenatal care delivery by service providers in a continuous way after providing necessary descriptions to service providers and recipients regarding research process and

taking their consent. In order to determine reliability and validity of forms for research units' specifications and health care providers' specifications and the checklist, there was no need for re-specifying reliability given their frequent usage in previous studies and approving reliability (Jahani's work in Mashhad). Following data collection, data were analyzed using SPSS (Version 18) software and Kruskal-Wallis and chi-square tests and 95 percent confidence level was used. P smaller than 0.05 was considered as significant.

FINDINGS

In the current study, 260 women at reproductive age with mean age of 27.45 ± 5.76 years were studied. According to the results, 218 ones (83.8%) were housewife, 42 ones (16.2%) were employed. 219 ones (92%) had history of pregnancy and 209 ones (88.8%) had delivery experience. history of pregnancy frequencies and previous deliveries of research samples are given in summary in Tables 1 and 2.

Among health center staffs who were responsible for prenatal service delivery, 10 ones (30.3%) were employed official midwife and 23 ones (60.7%) were family doctor midwife. 26 ones (61%) provided this type of services since the beginning of prenatal care plan. Mean age, work experience, years of working in maternal integrated care programs are given in Table 3.

According to the research results, 16 participants (49.8%) took part last year in integrated care retraining courses, because in some centers there was not possibility for taking part in retraining sessions due to lack of retrainingcourse holding and shift in delivery facilities during the course and provision of midwifery services in the center.

Results on compatibility of care level with optimal level showed that total process of care level was average in 93.5% of cases (Diagram 1).

Table 1. Frequency distribution of research samples in terms of pregnancy and delivery frequency

Variable	Pregnancy number	Delivery number
	No. (%)	No. (%)
One	20 (7.7)	29 (11.2)
Two	109 (41.9)	100 (38.5)
Three and more	131 (50.4)	131 (50.4)
Total	260 (100)	260 (100)

Table 2. Frequency distribution of research samples in terms of the number of abortions and stillbirths

Variable	Abortion number	Stillbirth number
	No. (%)	No. (%)
One	6 (50)	4 (100)
Two	0 (0)	0 (0)
Three and more	6 (50)	0 (0)
Total	12 (100)	4 (100)

Table 3. Mean and SD of specifications of health care providers in service delivery units

Variable	SD-mean	Min.	Max.	No.
Age of health care providers	32.48 ± 6.95	30.02	34.94	33
Total years of working	11.21 ± 6.59	8.87	13.55	33
Years of providing service in care process	4.54 ± 1.78	3.91	5.17	33
Number of days in retraining	1.81 ± 0.91	1.49	2.14	33

Table 4. Mean and SD of total score of prenatal care process in health centers

Variable	SD-mean	Confidence interval 95%	No.
Mean total score of care process	34.68 ± 3.10	34.30 – 35.06	33
Mean score of technical performance part of care process	24.09 ± 3.07	23.07 – 24.47	33
Mean score of interpersonal interaction part of care process	21.17 ± 1.67	20.97-21.38	33

Table 5. Relationship between staff attitude toward necessity of prenatal care and mean total score of prenatal care process in Zabol health centers

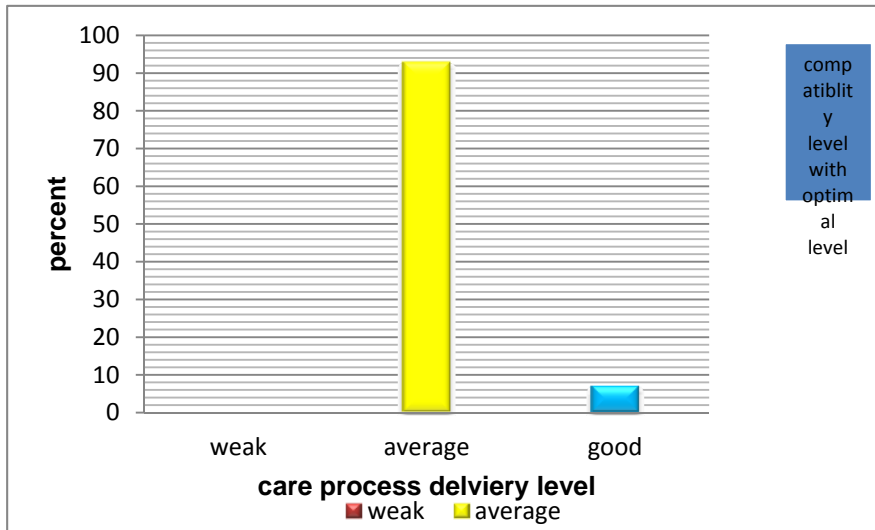| Variable	Mean score after process	Test result
Staff attitude toward necessity of prenatal care	Mean rating score	Kruskal-Wallis test
Average	25.01	Chi-square = 7.941
High	8.10	Df = 12
Very high	66.9	P = 0.790

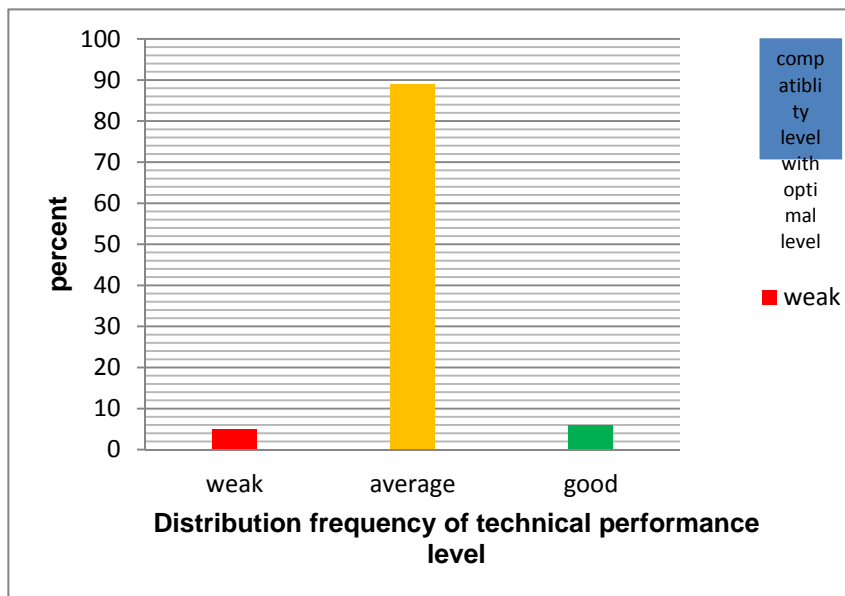**Diagram 1. Distribution frequency of prenatal care process levels provided in Zabol health centers**

Diagram 2. Distribution frequency of technical performance level of prenatal care provided in Zabol health centers
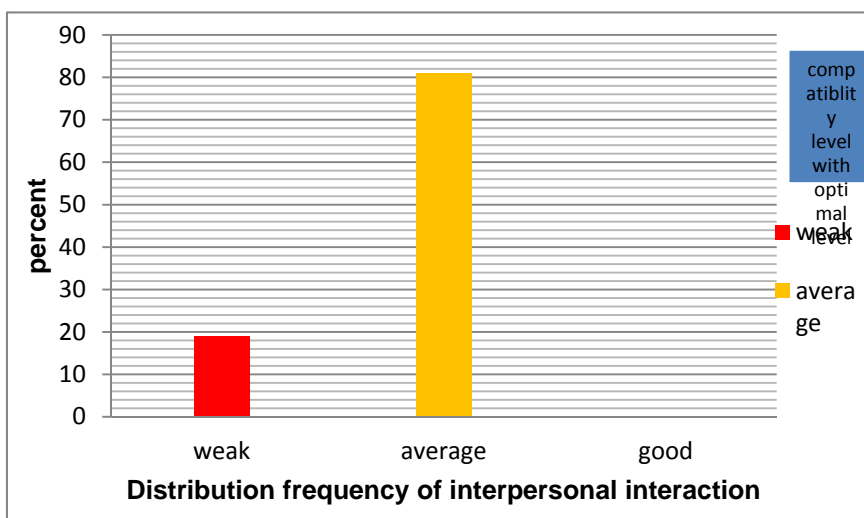

Diagram 3. Distribution frequency of interpersonal interaction between health care providers and clients level of prenatal care provided in Zabol health centers

Results regarding the way of recruitment of staff indicated that in some centers, all agents of service delivery were included in family doctor program and referral system and did not receive special education concerning maternal integrated care. Authorities in the centers only provided training on the proper way of completing forms at the beginning of the plan period regarding training these individuals.

Results regarding history taking, examinations and tests, ultrasound, and referral cases shoed that in some centers, trend of doing examinations and test and other referral cases is not done well, because often the prenatal forms available in the health files in tests section were incomplete or blank. Statements by prenatal care providers regarding the responsibilities and other services assigned in the centers which were given in the questionnaires denoted that 9 ones (27%) had other responsibilities in the center in addition to their normal ones. Results indicated that even some staffs had more than two responsibilities. However, 24 ones (72.7%) stated that they had opportunity to perform prenatal care.

Results on attitude of health care providers toward necessity of performing prenatal care showed that 26 ones (78.78%) reported necessity of cares and their interest in the profession as high and very high. Regarding acquiring communication and consulting skills, results showed that 23 ones (69.69%) had passed related workshops.

Results concerning prenatal care process provided in the centers showed that mean total score of prenatal care process was 34.68 ± 3.10. In care processimplementation part, mean score of technical performance of care in the centers was 24.09 ± 3.07 and it was 21.17 ± 1.67 in interpersonal interaction.

Research findings on percentage of compatibility between current care level and optimal level in care process components showed that technical performance of health care providers and interpersonal interaction between health care providers and clients was at average level in 89.2% and 81.2% of cases respectively (Diagram 2 and 3).

Statistical tests on specifications of health care providers in terms of health centers showed there was no significant relationships between position of care providers (p = 0.380), type of employment (p = 0.698), having adequate time for performing prenatal care (p = 0.818), interest in the job (p = 0.967), having communication skills (p = 0.386), having responsibilities in addition to midwifery service delivery (p = 0.497) and taking part in past year retrainingcourse regarding maternal integrated care (p 0.331) and attitude to necessary of performing prenatal care in Zabol health centers. In addition, research findings showed that trainings mentioned in prenatal care form were not performed in roughly over 75% of cases. In interpersonal interaction part, ensuring the patient on confidentiality of information, not introducing service provider to the client, non-observance of non-verbal skill in communication with clients were cases which were less taken into account during consulting and care. Performance of the centers was poor regarding informing clients about importance of prenatal care and its delivery in the centers.

DISCUSSION

Since prenatal care and consulting is regarded as the preventive medicine related to pregnancy and childbirth, and using which it is possible to identify all factors that potentially influence pregnancy and delivery outcomes, and provide solutions to vulnerable women to reduce mother and infant mortality rate, thus prenatal care and consulting is the most important part of prenatal care [16].

Findings of the current work showed that prenatal care process in selected health centers of Zabol city are at average level. These findings are consistent with the findings in the quality evaluation study by Simbar et al. (2013) and prenatal care quality evaluation study by Farokhi et al. (2008). It seems that there may be different reasons for average performance of prenatal care providers including undefined work load for midwife which works at first level of service delivery as family doctor midwifery in delivery facilities in the village. They also sometimes work as polyvalent expert in some health centers and perform both tasks of midwives and regulatory work including visits to health centers, thyroid screening, vaccinating at-risk groups, responsible for collecting statistics monthly from health centers, clinics responsible for mother and child. Thus at the time of referring to centers by mothers for taking prenatal services, they may face absence of midwife. It would influence especially regarding villages where mothers come from almost long distances. Simbar study also mentioned lack of adequate time in this regards [17].

Other variables investigated in this work included technical performance and interpersonal interaction. Results of this study showed average compatibility with optimal level which was not consistent with findings by Oladapo et al. (2008), but it was consistent with findings by Simbar (2013) in some variables [18]. It seems that factors affecting this process include disproportion between the female population coverage and staffing midwife. On the other hand, lack of awareness of the mothers on importance of prenatal care, lack of access to laboratory services, ultrasound, economic issues in families, lack of appropriate health education appropriate to mothers, needs, lack of counseling and relationship skills with mother can affect prenatal care process in technical performance and interpersonal interaction parts.

The other variable studied in this work was passing retrainingcourse for service providers. In this study, only 49.8% of service providers succeeded passing retrainingcourse in the last year, and other participants did not take part in the retraining course due to work shifts in delivery facilities and lack of alternative agent in the service delivery centers. Few similar studies have been conducted in this relation.

Investigation of prenatal care process provided to mothers showed that most performed care was at average level, and this average level was related to bother technical performance and interpersonal interaction between health care providers and clients fields. It seems that providing such services as Pap smear, assessment of vaccination, examination requirements, recommend folic acid, consulting service for mothers and filling prenatal care form in one session entirely is not feasible, thus it is

betterto consider time sequence for this service in order to increase service quality and prenatal care coverage and increase awareness of mothers about continuous care. According to results of this work, staff performance in interpersonal interaction area was also at average level. Considering observation of researchers during data collection about the way of service delivery by midwives and other service providers to mothers, such factors as mothers uncertainty in relation to the information confidentiality, lack of skills in interpersonal communication with mothers, lack of nonverbal skills when training the mothers, lack of attention to the privacy, lack of adequate consultation space, lack of accurate training tools, lack of educational media appropriate to the target group were found as factors affecting compatibility level with optimal status. In the study by Smibar such factors and ensuring mothers regarding information confidentiality was not considered.

Relationship between midwife or doctor and mother and their higher interaction is highly important. Although results of this work showed that 79% of service providers passed communication skills courses, verbal and non-verbal communication techniques including listening, paying attention, eye contact appropriate to the mother's emotions and statements were not performed during service delivery. This was because of quality of held workshops, number of workshops and perhaps due to lack of educational need evaluation for midwives which did not led to sustainable behaviors in service provides.

Using observation method for collecting data about performance of health care providers was one of the research limitations. Although it was attempted to conduct care evaluations after several times of observation, care process may not be usual and normal due to presence of the researcher and health care provider may attempt to control her behaviors when providing prenatal care service.

CONCLUSION

Research findings showed that prenatal care process level in the region under study was average. Since many of pregnancy and even post-deliveryproblems result from improper prenatal care and low awareness level of mothers, it is suggested that educational needs of midwives are evaluated and educational workshops including consulting, interpersonal communication, integrated care are held for empowering service providers so that diseases can be prevented and mothers' health can be improved. Therefore, health managers and planners are recommended that investigate prenatal care process regularly at first level and review work load and work description of midwives, and promote service quality since beginning of prenatal care process by institutionalizingproper way of prenatal care, so that performance of midwives in prenatal service delivery is enhanced. Finally it can be concluded that integration of this program in the network system and newness and novelty of prenatal care program in Zabol health centers create some obstacles and problems for performing care, which should be accurately examined in order to modify prenatal care process.

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