Factors associated with the utilization and content of prenatal care in a western urban district of Turkey

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Abstract

Objective. To define the prenatal care utilization pattern in Bornova and determine the factors affecting the amount and content of prenatal care.

Design. Follow-up study.

Setting. Bornova is an urban district in western Turkey.

Study participants. Two hundred and forty-five pregnant women registered with primary care settings in Bornova during the year 2000. Response rate was 83.7%.

Main outcome measure. We determined the amount of prenatal care using Adequacy of Prenatal Care Utilization Index. Criteria used to assess the content of services include number of checks for maternal weight gain, blood pressure and foetal heart-beat measurements, advice about healthy lifestyles, laboratory examinations, and tetanus immunization.

Results. Rates of the women who visited public primary health care settings, private care sources, and public hospitals at least once were 76.0, 57.1, and 54.6%, respectively. As to prenatal care, 64.9% of the participants received an adequate amount and 25.9% an adequate content. Parity (P = 0.00), insurance coverage (P = 0.00), abortion history (P = 0.03), husband’s occupation (P = 0.04), maternal age (P = 0.04), and level of educational attainment (P = 0.03) were related to the amount of care. Employment status (P = 0.03), continuous use of private sources (P = 0.00) and public hospitals (P =0.01) were associated with the content.

Conclusion. This study has highlighted considerable associations between the amount of prenatal care and individual features in addition to those among the content of care, individual features and type of care sources. Causes of variations in prenatal care delivered in urban and relatively wealthy populations of developing countries must be explored using the appropriate criteria.

Keywords: prenatal care provider, Turkey, urban health services, utilization

To improve pregnancy outcomes, it is important to assess the adequacy of prenatal care services. Timely initiation and amount of services are the most commonly used measures of prenatal care [1–3]. However, quantity of visits is not a reliable indicator for the quality of prenatal care [4] and fewer routine visits of low risk women do not necessarily put pregnancies at increased risk. The key factor of healthy outcomes in those women is the content of services [4,5].

Several sociodemographic factors have been found related to the use of prenatal care services [1–3,6–10], but less attention has been devoted to organizational factors like variation in source of care and continuity of services, which are the major predictors of service quality [7]. Pregnancy care is often provided by multiple caregivers [11] whereby different uncoordinated providers fail to integrate the process into a meaningful whole, even causing duplications and omissions of services [12]. Continuity is generally achieved by having the same person or same facility to provide the care and also defined as the presence of a mechanism to ensure an uninterrupted succession of events [13]. Previous studies on continuity of prenatal care either focused on whether the group providing care also attended the delivery [14,15] or assessed the percentage of care further provided by the initial physician [16].

Background

Infant (29 per 1000) [17] and maternal mortality (130 per 100,000) [18] are important health problems in Turkey. Approximately 19% of mothers do not receive any prenatal care. There are wide regional disparities in the availability and quality of health care services across the country. Mortality among
Articles

The percentage of not having any prenatal care is 9 in the west in comparison to 38 in the east [17].

Public primary care services are delivered via two different organizational settings under the authority of Turkish Ministry of Health: Health Centres, providing communities with primary health care, preventive means and environmental health, and Maternal and Child Health/Family Planning (MCH/FP) centres, providing preventive and curative care only for mothers and children. Both settings deliver prenatal care services free of charge and the teams consist of physicians, nurses, sanitarians, and midwives where midwives carry the primary responsibility for prenatal care.

Over the last few decades, the role of primary health care has been insufficiently emphasized in Turkey resulting in under-funding of government-sponsored primary care services and hospital-centred health services. Privatization policy of the government has brought about a dramatic increase in the number of private facilities, especially in metropolitan cities and western regions [19–21]. In 1998, 60% of women who received at least one prenatal care service in the last 5 years defined private facilities as their main source of prenatal care whereas the rate was only 23% for primary care settings [22].

Owing to the fragmented structure of the health system, patients are likely to receive their medical care from several different care providers [23]. Determining the level of multiple source utilization and the extent of continuity of care are essential in rational planning of prenatal services. With a relatively well-organized primary care system and an elevated number of other public and private care facilities, Bornova is an urban district of Izmir located in the western part of Turkey, which serves as a convenient community for research on the fragmented structure of health services. Therefore, we designed this study to define prenatal care utilization pattern in Bornova and determine the factors that affect the amount and content of prenatal care.

Methods

Study population and data collection

This follow-up study was conducted in Bornova Health District (BHD). Target population consisted of all 3062 pregnant women registered with the primary care settings in BHD during the year 2000. We calculated the sample size by qualitative variables assuming the most unfavourable situation, proportion was 0.5, which led us to a sample of 245 people with a confidence interval of 95%, accepting a sample error of 6%. The target group was stratified to 18 public primary care settings (15 Health Centres and 3 MCH/FP Centres). Then we performed systematic sampling by listing monitoring cards of the pregnant women in each stratum and selecting the members of the sample at equal intervals. Each woman in the study group was consented by midwives.

Data were collected within the third month of pregnancy and within 6 weeks after delivery by two questionnaires. Response rate was 93.1% (N = 228) for the former and 83.7% (N = 205) for the latter where respondents of the latter formed the study population. The majority of the questionnaires (89.8%) were administered via phone and 10.2% by direct home visits. The first author personally conducted all interviews.

Variables

First questionnaire included questions about sociodemographic variables (age, educational attainment, employment status, and husband’s occupation and insurance coverage); date of last menstruation; obstetric history [number of previous pregnancies, deliveries, abortions, curettages, low birthweight (LBW; <2500 g), and preterm deliveries]; number of living children and frequency of prenatal care visits. We respectively categorized educational attainment by years as <6, 6–8, and >8 years in regard to duration of primary, middle and secondary schooling in Turkey.

Obstetric risk factors were determined by exploring any presence of diabetes mellitus, cardiac disease, hypertension, and renal disease during pregnancy. Second questionnaire contained questions about the prenatal care received since the first interview, pregnancy-related complications, and the delivery (date and place including birth weight).

We defined prenatal visits as meetings with a physician or a midwife for the medical supervision of pregnancy. In both interviews women were asked to provide all the information about the prenatal services obtained from different care sources, report the weeks of these visits and define the services performed in each visit.

We used three modalities of care: primary care settings, public hospitals, and private sources (private gynaecologist’s offices, private hospitals, and private services by public hospitals). We defined continuity as having the same facility for prenatal care and categorized a care source as continuous, if a woman received services from the same facility in each of the three trimesters. Accordingly, a woman could receive continuing services from more than one facility.

This study had two dependent variables: amount and content of prenatal care.

Amount of prenatal care

We assessed the amount of prenatal care utilization via Adequacy of Prenatal Care Utilization Index (APNCUI), which is based on observed and expected number of visits. We determined the expected number using the month of initiation of care and gestational age, based on the schedule of visits, as recommended by the American College of Obstetrics and Gynaecology (ACOG). Subsequently we calculated the ratio of observed to expected number of visits in order to obtain the four groupings of APNCUI: Adequate plus, Adequate, Intermediate, and Inadequate utilization of services [24]. Turkish Ministry of Health recommends one visit before week 24, one visit every 4 weeks from week 24 through 36, and at least one visit after 36 weeks. However, the Ministry assesses the adequacy of amount according to the ‘at least six visits’ criterion, without considering their timing [25]. Therefore we determined the distribution of the population according to the ‘at least six visits’ criterion.
Content of prenatal care

Guidelines regarding the content of prenatal care are often inconsistent across countries [26]. Therefore, we used the prenatal monitoring recommendations by the Ministry of Health in order to assess the quality of services. Accordingly, the criteria for content adequacy were at least six measurements of maternal weight gain, blood pressure and foetal heartbeat, and advice about healthy lifestyles during six visits provided before 24 weeks, every 4 weeks from week 24 through 36, and after 36 weeks. Additional criteria were having blood and urine tested at least for once and tetanus immunization [25].

Statistical analysis

We assessed the relative importance of independent variables in explaining the adequacy of amount and content of prenatal care using forward stepwise logistic regression analysis. Prenatal care utilization was dichotomized as inadequate versus adequate for analysis. APNCUI’s ‘intermediate’ and ‘inadequate’ categories were combined into one called as the inadequate care group whereas ‘adequate’ and ‘adequate plus’ categories were defined as adequate. Variables were added to the model one at a time as long as their P values were less than 0.05. For each independent variable, the category found to be at highest risk for inadequate number of visits in descriptive analyses was selected as the reference group and scored as ‘0’ for constructing odds-ratios.

Results

Study population characteristics and birth outcomes

All respondents were married and none had any chronic disease. Percentage of women with a pregnancy-related complication (vomiting, bleeding and urinary infection) during last pregnancy was 33.2% (n = 68). Rate of women who delivered in public hospitals was 85.8% (n = 176) whereas the rate was 13.7% (n = 28) in private hospitals. Only one woman delivered at home. Preterm delivery and LBW rates were 10.2% (n = 21) and 6.3% (n = 13), respectively. Of the preterm deliveries, 33.3% (n = 7) was with LBW. Table 1 summarizes other population characteristics.

Sources of care and continuity of services

Figure 1 shows the distribution of care sources. Seventy-six percent of women obtained services from primary care settings at least once, all delivered by midwives. Percentages of women who obtained services from primary care settings at least once, all delivered by midwives. Percentages of women who obtained services from primary care settings at least once, all delivered by midwives. Percentages of women who obtained services from primary care settings at least once, all delivered by midwives. Percentages of women who obtained services from primary care settings at least once, all delivered by midwives. Percentages of women who obtained services from primary care settings at least once, all delivered by midwives. Percentages of women who obtained services from primary care settings at least once, all delivered by midwives. Percentages of women who obtained services from primary care settings at least once, all delivered by midwives. 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Percentages of women who obtained services from primary care settings at least once, all delivered by midwives. Percentages of women who obtained services from primary care settings at least once, all delivered by midwives. Percentages of women who obtained services from primary care settings at least once, all delivered by midwives. Percentages of women who obtained services from primary care settings at least one source of care was 75.6% (n = 155), and two sources was 15.6% (n = 32) (Table 2). None of the women was found to have used three sources continuously. Most frequently used modality, as the ongoing source of care was ‘only primary care setting’. Percentages of women who continuously used primary care settings, private sources, and public hospitals were 42.4% (n = 87), 32.7% (n = 67), and 16.1% (n = 33), respectively.

Amount of prenatal care utilization

Median number of prenatal visits was 9 (minimum to maximum: 3–22) and rate of first trimester visits was 90.2% (n = 185). Table 3 compares APNCUI categories with ‘at least six visits’ criterion of the Ministry of Health. This criterion classified eleven women as adequate users whereas APNCUI included them in the ‘inadequate’ group. All of these women started prenatal care after first trimester. One woman, who delivered in 28th week, was categorized as adequate by APNCUI as opposed to inadequate by the Ministry of Health.

Table 4 summarizes logistic regression results of determinants of the amount of prenatal care. We reported only significant values in this table: The analysis showed that being 19–34 years old and covered by a health insurance, having an educational attainment of at least 6 years and having a history of at least one abortion increased the likelihood of obtaining an adequate amount of care. Women having their first birth were 5.1 times more likely to receive an adequate number of services than were those having their third or more. Accordingly, the odds of receiving an adequate amount was 2.9 times higher for a woman who was expecting her second birth than her counterparts of a higher parity. Being married to a worker or a spouse from other job groups disclosed an increasing probability of being included in the adequate category compared with those with jobless spouses.

Discussion

Studies investigating prenatal care in industrialized and developing countries are based on different criteria as circumstances differ greatly from one country to the other in terms of amount and content of care [1,6,8,10,22,27]. In countries like Turkey, selection of criteria assessing the prenatal care utilization is critical due to wide disparities among the means of health care delivery across the country [17]. Despite the fact that Turkish Ministry of Health assesses adequate amount of prenatal care according to ‘at least six visits’ criterion [25],
some studies employed different criteria such as one accepting at least a single utilization [6] and another at least four [6]. Use of any of these criteria is rational for assessment in most parts of Turkey; however, they are not appropriate indicators for the western-urban parts of the country. Hence, considering this point we used APCNUI, which is based on the prenatal visit schedule recommended by ACOG [24]. The fact that distribution of the population according to APNCUI categories is similar to those reported in the United States of America, which are also based on the same index [10,28], confirms the appropriateness of the use of APNCUI. However, the efficacy of the ACOG schedule is not supported by empirical evidence and it might include too many visits [4]. Nevertheless, APNCUI eliminates the disadvantages of the Ministry of Health criterion such as the possibility of categorizing women as adequate users who failed to start obtaining prenatal care in the first trimester and/or including those in the group of inadequate users who delivered preterm.

An inverse relationship was identified between parity and amount of care which was in accord with the findings of
Parity one was found to obtain the most adequate care and parity two the second most. One possible explanation for this is that women with low parity are more cautious about their pregnancies, whereas their multiparous counterparts may tend to believe that modern health care is unnecessary owing to accumulated experience from previous pregnancies and births [1]. Findings of our study elucidating the fact that mothers in risky age groups were less likely to receive an adequate amount of care have also reflected the insufficiency of the health system in capturing risk groups.

The study was not capable of addressing the economic status, since women were not able to report their family income. However, the husband’s occupation provides some information on effects of the financial standing. Having a jobless husband was found to be associated with an increased risk of inadequate services. Also the possibility of receiving adequate services was lower for women who were married to workers compared with those with husbands from other job groups.

Our findings about health insurance [1,3,6,8] and maternal educational attainment [1–3,6,7] were in accord with results of the previous studies. As reported by Glei [27] amount of care was found to be positively related with abortion history and no association was identified attributable to history of LBW—the possible reason being the absence of any history of birth weight less than 2000 g. According to Elam-Evans [29], prenatal care utilization is associated with LBW history, but not with delivery of a moderately LBW infant.

In previous studies by different providers in Turkey, women were asked to report their main source of care [6,22]. However, investigating only the main source of care does not reflect the behaviour of utilizing multiple care services. On the other hand, categorization of women as users of a single source or multiple sources [8] is not appropriate for Bornova where alternative care resources differ greatly from each other. We categorized the use of a care source as continuous when a woman received service from the same source in each of the three trimesters. This criterion made it possible to assess the independent effect of each health care facility.

Only half of the pregnant women who were classified into adequate amount of care group obtained adequate content of care. Lower percentage of adequate content may be related to an uncoordinated care process that results in duplications and/or omissions of different components of prenatal care. Adequacy of content was related to continuous use of private sector and public hospitals, whereas it was hardly associated with primary care settings. These findings are in accord with a

Table 2 Distribution of women by continuity of prenatal care

<table>
<thead>
<tr>
<th>Continuous source of care</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>No continuous use</td>
<td>50</td>
<td>24.4</td>
</tr>
<tr>
<td>Only primary care settings</td>
<td>56</td>
<td>27.3</td>
</tr>
<tr>
<td>Only private sources</td>
<td>45</td>
<td>22.0</td>
</tr>
<tr>
<td>Only public hospitals</td>
<td>22</td>
<td>10.7</td>
</tr>
<tr>
<td>Primary care settings and private sources</td>
<td>21</td>
<td>10.2</td>
</tr>
<tr>
<td>Primary care settings and public hospital</td>
<td>10</td>
<td>4.9</td>
</tr>
<tr>
<td>Private sources and public hospital</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>Total</td>
<td>205</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 3 Comparison of Adequacy of Prenatal Care Utilization Index (APNCUI) categories with adequacy of care according to Turkish Ministry of Health

<table>
<thead>
<tr>
<th>APNCUI criterion</th>
<th>Ministry of Health criterion</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Adequate (n)</td>
<td>Inadequate (n)</td>
</tr>
<tr>
<td>Inadequate</td>
<td>21</td>
<td>11</td>
</tr>
<tr>
<td>Intermediate</td>
<td>4</td>
<td>36</td>
</tr>
<tr>
<td>Adequate</td>
<td>1</td>
<td>73</td>
</tr>
<tr>
<td>Adequate plus</td>
<td>—</td>
<td>59</td>
</tr>
<tr>
<td>Total</td>
<td>26</td>
<td>179</td>
</tr>
</tbody>
</table>

previous studies [1,7,9]. Parity one was found to obtain the most adequate care and parity two the second most. One possible explanation for this is that women with low parity are more cautious about their pregnancies, whereas their multiparous counterparts may tend to believe that modern health care is unnecessary owing to accumulated experience from previous pregnancies and births [1]. Findings of our study elucidating the fact that mothers in risky age groups were less likely to receive an adequate amount of care have also reflected the insufficiency of the health system in capturing risk groups.

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Our findings about health insurance [1,3,6,8] and maternal educational attainment [1–3,6,7] were in accord with results of the previous studies. As reported by Glei [27] amount of care was found to be positively related with abortion history and no association was identified attributable to history of LBW—the possible reason being the absence of any history of birth weight less than 2000 g. According to Elam-Evans [29], prenatal care utilization is associated with LBW history, but not with delivery of a moderately LBW infant.

In previous studies by different providers in Turkey, women were asked to report their main source of care [6,22]. However, investigating only the main source of care does not reflect the behaviour of utilizing multiple care services. On the other hand, categorization of women as users of a single source or multiple sources [8] is not appropriate for Bornova where alternative care resources differ greatly from each other. We categorized the use of a care source as continuous when a woman received service from the same source in each of the three trimesters. This criterion made it possible to assess the independent effect of each health care facility.

Only half of the pregnant women who were classified into adequate amount of care group obtained adequate content of care. Lower percentage of adequate content may be related to an uncoordinated care process that results in duplications and/or omissions of different components of prenatal care. Adequacy of content was related to continuous use of private sector and public hospitals, whereas it was hardly associated with primary care settings. These findings are in accord with a
Turkish study in which the likelihood of having any laboratory services was higher for women who attended private clinics [6]. Although public primary care settings served as a source for 75% of the present population, the majority of these women received services also from other sources. This finding may be attributed to the problems of primary care settings such as lack of equipment, material and so on, which force women to seek care from the private sector.

The only individual factor found to be related to content was employment outside the house. This finding, which is consistent with the results of Delgado-Rodriguez [9] may be attributed to improved autonomy of working women in making their decisions regarding the household as well as their own and children’s health.

The study presented here has some limitations. Even though we interviewed participants at two different times through their antenatal period, the accuracy and completeness of reporting can be a moot point as in any interview study. What is more we studied the amount and content of care only among women who were registered with BHD during their pregnancy. However, the fact that the expected and registered numbers of pregnant women are equal in Bornova [30] indicates that the primary care settings determine almost all of the pregnant women in their respective areas. Considering the lack of any record system that enables the follow-up of all pregnant women during their antenatal period, a limited size of sample has been targeted for this prospective study. Nevertheless the sample represents a typical urban population that is faced with a fragmented structure of health care services.

Despite some limitations, this study has highlighted considerable associations between the amount of prenatal care and individual features in addition to those among the content of care, individual features and the type of care sources. Nevertheless, there is a pressing need for further prospective research that will explore the causes for variations in the prenatal care and choice among the care providers in urban and relatively wealthy populations of developing countries.

Table 4  Logistic regression results of determinants of the amount of prenatal care

<table>
<thead>
<tr>
<th>Variable</th>
<th>Odds-ratio</th>
<th>95% confidence interval (CI)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (&lt;19 and 35 years)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19–34 years</td>
<td>2.2</td>
<td>1.0–4.9</td>
<td>0.04</td>
</tr>
<tr>
<td>Education level (&lt;6 years)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥6 years</td>
<td>2.2</td>
<td>1.0–4.8</td>
<td>0.03</td>
</tr>
<tr>
<td>Occupation of the husband (jobless)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Worker</td>
<td>2.5</td>
<td>0.8–8.1</td>
<td>0.13</td>
</tr>
<tr>
<td>Others</td>
<td>3.5</td>
<td>1.5–7.8</td>
<td>0.00</td>
</tr>
<tr>
<td>Health Insurance (uninsured)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insured</td>
<td>4.0</td>
<td>1.9–8.6</td>
<td>0.00</td>
</tr>
<tr>
<td>Number of prior live births (≥2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No previous live birth</td>
<td>5.1</td>
<td>1.7–14.9</td>
<td>0.00</td>
</tr>
<tr>
<td>One previous live birth</td>
<td>2.9</td>
<td>0.9–8.5</td>
<td>0.05</td>
</tr>
<tr>
<td>Abortion history (no)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>3.3</td>
<td>1.1–9.8</td>
<td>0.03</td>
</tr>
</tbody>
</table>

1Other variables in the model that were not found significant: education level of the husband, employment outside the house, presence of any children, LBW history, and complications during the last pregnancy.

Table 5  Logistic regression results of determinants of the content of prenatal care

<table>
<thead>
<tr>
<th>Variable</th>
<th>Odds ratio</th>
<th>95% confidence interval (CI)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment outside the house (no)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>3.8</td>
<td>1.1–12.7</td>
<td>0.03</td>
</tr>
<tr>
<td>Continuous use of private sources (no)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>5.5</td>
<td>2.5–12.9</td>
<td>0.00</td>
</tr>
<tr>
<td>Continuous use of public hospitals (no)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>4.7</td>
<td>1.8–11.8</td>
<td>0.01</td>
</tr>
</tbody>
</table>

1Other variables in the model that were not found significant: age, education level, education level and occupation of the husband, health insurance, number of prior live births, presence of any children, abortion history, LBW history, complications during the last pregnancy, and continuous use of primary care settings.
References


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