Prevalence and determinants of Caesarean delivery in Punjab, Pakistan

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Abstract

Background: Caesarean section (C-section) is a life-saving obstetric procedure that reduces maternal mortality and improves reproductive health. Although, vaginal delivery is still an important safe and low-cost method of delivery, C-section is sometimes performed when it is not even required, which creates health challenges for pregnant women and their newborn infants.

Aims: To estimate the effect of a set of institutional, demographic, socioeconomic and spatial variables on C-section delivery (n = 2424) in Punjab, Pakistan.

Methods: We used data from the Multiple Indicator Cluster Survey Punjab 2014 and multiple logistic regression analysis. Analysis was carried out using STATA version 12.

Results: Higher maternal age at first marriage, higher number of antenatal care visits, and higher wealth quintiles were associated with higher risk of C-section. Women in Punjab were more likely to deliver through C-section in private health facilities and there was no significant difference between urban and rural areas. There was a significant difference in the risk of C-section in different divisions of Punjab, for example, DG Khan and Rawalpindi showed the lowest risk compared with the reference division of Bahawalpur, which is partially explained by the developmental disparities and access to public healthcare facilities.

Conclusions: The government should facilitate access to healthcare facilities in areas that are easily accessible, especially, to rural women.

Keywords: Caesarean section; institutional delivery; maternal health; Punjab; health services.

Introduction

Pakistan is the fifth largest contributor to global maternal mortality and 6% of the world's maternal deaths occur in Pakistan (1). Maternal mortality rate in Pakistan is 276 deaths per 100 000 live births (2,3). Pregnancy-related complications are a major cause of maternal and infant morbidity and mortality (3) and in 2013, ~8000 women (age 15–45 years) died in Pakistan. The reduction in maternal mortality observed in high-income countries has been achieved by providing access to skilled care during pregnancy and childbirth, and by provision of safe interventions such as assisted vaginal delivery and caesarean section (C-section), which are also achievable in developing countries (4). C-section is a life-saving obstetric procedure that reduces maternal mortality and improves reproductive health outcomes for both mothers and newborn infants. Even though delivery by C-section has become increasingly safe in the past decade, it still cannot replace vaginal delivery in terms of low mortality, neonatal mortality and cost. However, during the last three decades this surgical intervention has been unnecessarily performed (for reasons other than obstetric complications), leading to an increase in C-section rates

especially in developing countries (5). As a reference, the World Health Organization, in its 1985 report, suggested an optimal range for C-section rates of 5–15% (6).

Many studies have found that the likelihood of delivery through C-section depends on a number of institutional, demographic and socioeconomic factors. The availability of facilities, obstetricians and the place of birth, that is, private or public sector institutions, is associated with C-section rate (7,8). C-section is significantly associated with multiple conception, maternal age at birth, rise in institutional deliveries, number of previous deliveries, site of prenatal care (private or public), socioeconomic status of household and access to antenatal care (9–11). Some maternal characteristics such as education and access to antenatal care are also strongly associated with the likelihood of C-section (4,10,12).

In view of the recent understanding about the factors associated with C-section, this study identified a set of socioeconomic, demographic, spatial and institutional indicators associated with C-section delivery. We used data from the Multiple Indicator Cluster Survey (MICS) conducted in Punjab province of Pakistan during 2014. We focused on Punjab Province because it accounted for 53%

of the total population of Pakistan according to the last census in 2017. The developments in Punjab are therefore expected to affect significantly national progress towards achieving the United Nations Sustainable Development Goals. We expect that our results will make a significant contribution to public health policies in Punjab.

Methods

Study design, setting and sample size

MICS is an international household survey developed by the United Nations Children's Fund (UNICEF). The Punjab Province is divided into 9 administrative divisions and 36 districts. The universal set for MICS Punjab 2014 consisted of all the households and their members in all urban and rural areas of Punjab. Fieldwork for MICS Punjab 2014 was carried out between June and September 2014. A 2-stage, stratified cluster sampling approach was used for sample selection. In urban areas, the first-stage selection unit is the enumeration block and in rural areas, it is the village. The first-stage units are selected with probability proportional to size. From each first-stage sample unit, a sample of 20 households was selected with equal probability, in both rural and urban areas, as secondary sampling units for urban and rural domains. The entire sample of households (secondary sampling units) was drawn from 2050 primary sampling units, of which, 774 were urban and 1276 were rural, according to a systematic sampling technique with a random start. The final allocation was 2050 clusters with 20 households in each, giving a total sample of 41 000 households. The response rate was almost 98% across Punjab Province. Further details on MICS Punjab 2014 are provided elsewhere (13). The present study was based on publicly available data from MICS Punjab 2014 (http://mics.unicef.org/surveys). The study was not funded research or part of any other project, and it did not involve any human or animal experiments, therefore, ethical approval was not required.

Variables

Dependent variable

The dependent variable, binary in nature, was the mode of delivery, that is, normal delivery was coded as 0 (*n* = 8178) and delivery through C-section was coded as 1 (*n* = 2424). We initially selected women who completed their interview (*n* = 53 668) and then selected only those women who gave birth within the last 2 years (*n* = 10 602) at any of the public or private healthcare facilities.

Covariates

The covariates were classified into the following categories after literature review: demographic (maternal age at first marriage, maternal age at first birth and birth order of child); socioeconomic (maternal education level and wealth quintile); institutional (place of delivery and antenatal care visits); and spatial (area and administrative divisions) (4,14–18). The demographic variables included maternal age at first marriage, maternal age at birth and birth order of the child (9,12). Maternal age at first marriage was divided into 5 categories: 15–19, 20–25, 26–30,

31–35 and ≥ 36 years. Maternal age at birth was divided into 4 categories: < 20, 20–29, 30–39 and ≥ 40 years. Birth order of the child was divided into 3 categories: first, second to fourth, and fifth and above. Socioeconomic variables included the education and wealth quintile of the mother (7,8,12). Maternal education was grouped into 5 categories: no education or preschool, which was equivalent to incomplete primary education; primary (5 years of education); middle (8 years of education); secondary (10 years of education); and higher (> 10 years of education including college or university education of professional, vocational and general categories). Maternal wealth quintile was divided into 5 categories: poorest, poor, middle, rich and richest.

The institutional variables included 3 dimensions: place of delivery; number of times the mother received antenatal care; and whether or not the mother received antenatal care (8,9,12,19). The variable of place of delivery consisted of 2 outcomes: birth at a public or private health facility. The number of times a mother received antenatal care consisted of 4 categories: 1–5, 6–12, 13–18 and ≥ 18. We used 2 types of spatial variables in our analysis: area and division. Area referred to the urban and rural residence. The division variable consisted of 9 administrative divisions of Punjab: Bahawalpur, DG Khan, Faisalabad, Gujranwala, Lahore, Multan, Rawalpindi, Sahiwal and Sargodha.

Data analysis

We carried out bivariate analysis and logistic regression analysis to identify the determinants of C-section and to predict the likelihood of the delivery by C-section. The general logit model took the form:

$$y_t = x'_t \beta + \mu_t$$

where yt was a binary response variable of delivery through C-section:

$$y_t = \{(1 \text{ if a woman delivers through C–Section } 0 \text{ otherwise })$$

and x_t was a vector of exogenous variables. The conditional probability Pr (yt=1|xt) measured the probability that a woman would give birth through C-section. μ_t was the error for the tth observation and coefficient β measured the change in probability of delivery through C-section because of a unit change in xt. Assuming that the error term µt followed independent and identically distributed logistic distribution, the conditional probability was given as follows:

$$Pr (y_t=1|xt) = \exp(x\_t^{\wedge\prime} \beta)/(1+ \exp(x\_t^{\wedge\prime} \beta))$$

This model could be estimated by the maximum likelihood estimation technique (20).

Results

Table 1 gives descriptive statistics of women who underwent C-section according to a set of demographic, socioeconomic, institutional and spatial characteristics. The proportion of women undergoing C-section monotonically increased with age at first marriage from 18.9%

Table 1 Percent delivered by C-section, various demographic, socioeconomic, institutional and spatial characteristics, MICS Punjab 2014

Selected variables	Women delivered through C-section (%)	No. of ever-married women who had a live birth in the last 2 yr
Demographic variables		
Maternal age at first marriage (yr)		
15–19	18.9	3965
20–25	26.1	4879
26–30	33.5	1107
31–35	39.2	167
≥ 36	14.6	13
Maternal age at birth (yr)		
< 20	18.3	348
20–29	24.9	5936
30–39	23.1	3924
≥ 40	14.7	446
Birth order of child		
1	26.6	4182
2–4	21.1	4911
≥ 5	17.3	867
Socioeconomic variables		
Education		
None/preschool	13.5	4816
Primary	21.1	1961
Middle	29.7	1096
Secondary	36.8	1467
Higher	44.6	1311
Wealth quintile		
Lowest	9.4	2327
Second	14.2	2166
Middle	23.5	2144
Fourth	31.8	2065
Highest	42.4	1951
Institutional variables		
Place of delivery		
Public facility	32.5	1909
Private facility	41.5	4565
Home	0.0	4125
No. of antenatal care visits		
None	5.4	1838
1–5	20.3	5867
6–12	41.4	2765
13–18	53.0	110
≥ 18	50.2	30
Missing	14.5	43
Antenatal care received		
Yes	27.4	8815
No	5.5	1838
Spatial variables		
Area		
Urban	32.7	3284
Rural	19.7	7369
Administrative divisions		
Bahawalpur	20.1	1068
DG Khan	8.5	1181
Faisalabad	24.8	1237
Gujranwala	26.6	1578
Lahore	30	1914
Multan	24.6	1162
Rawalpindi	24.5	882
Sahiwal	30.5	827
Sargodha	19.2	804
Total[a]	23.6	10 653

[a]*Total number of women (weighted) who gave birth in the last 2 yr. MICS, Multiple Indicator Cluster Survey.*

in the 15–19 years' age group to 39.2% in the 31–35 years' age group, and then decreased again for those > 36 years. When we considered maternal age at birth, the pattern of delivery through C-section was broadly similar to that for maternal age at first marriage. Less than one fifth (18.3%) of women aged < 20 years at the time of delivery underwent C-section but nearly 1 in 4 women aged 20–29 and 30–39 years (24.9% and 23.1%, respectively) underwent C-section.

Women giving birth to their first child were most likely to undergo C-section (26.6%) compared with subsequent births. Nearly 17% of the women giving birth to fifth or subsequent children underwent C-section. Nearly 13.5% of the uneducated women compared to 44.6% of those with higher education had a C-section. Similarly, 9.4% of the women in the lowest wealth quintile and 42.4% in the highest quintile underwent C-section. The proportion of women who had a C-section at a private health facility (41.5%) was higher than that at a public health facility (32.6%). Around 20% of the women who received antenatal care between 1 and 5 times underwent C-section, but > 40% of women who had a C-section received antenatal care 6–12 times. Over 50% of the women who received antenatal care for ≥ 13 times underwent C-section.

The proportion of women undergoing C-section in urban areas (32.7%) was significantly different from that in rural areas (19.7%). According to administrative division, the smallest proportion of women had a C-section (8.5%) in D G Khan, while the highest (30.5%) was in Sahiwal. Lack of access to C-section facilities partially explains the small percentage of women undergoing C-section, and easier access to facilities in Lahore (30%) and Rawalpindi (24.5%) explains why a larger proportion of women underwent C-section.

Table 2 gives the odds ratios (OR) from the logistic regression models that we estimated using a set of institutional, demographic, socioeconomic and spatial characteristics. Model 1 estimated OR using demographic and institutional explanatory variables. Model 2 included variables of Model 1 and additional spatial explanatory variables. Model 3 included all variables combined. The Wald χ2 test statistics showed if the parameters of all the variables in the estimated equation were simultaneously equal to 0. Based on the *P* value associated with the χ2 values generated by the Wald test for Models 1, 2 and 3, we rejected the null hypothesis, indicating that variables included in the estimated equation were not simultaneously 0. We also reported Hosmer–Lemeshow goodness of fit statistics and corresponding *P* values. *P* > 0.05 in all the estimated Models 1, 2 and 3 showed that the models fitted the data well.

Institutional factors

Model 1 in Table 2 shows the association between institutional variables (antenatal care and place of delivery) and risk of C-section after controlling for the demographic variables. Considering the place of delivery, a woman was 40% more likely to undergo C-section when she went to a private compared to public health facility. The

risk, however, decreased when we controlled the institutional variables with the spatial variable (Model 2) and for demographic, spatial and socioeconomic variables combined (Model 3). The number of antenatal care visits significantly affected the risk of C-section. Women who had 6–12 antenatal visits were 57% more likely to undergo C-section, and this increased further when women made 13–18 antenatal visits compared to the reference category. This may have been due to known complications in the delivery, so the women needed more antenatal visits. Although, the category of 18+ antenatal visits was insignificant, a possible explanation is that there was a limited number of observations (i.e., 30).

Demographic factors

The risk of undergoing C-section increased with age at first marriage (Table 2). When the age at first marriage was 20–25 years, the odds of delivery through C-section were 1.26 times higher compared with those in the 15–19 years' category (reference group). When age at first marriage was 26–30 years, the odds increased further (OR 1.8). When age at first marriage was 31–35 years, women were 2.6 times more likely to deliver through C-section. There was only a small change in the odds of undergoing C-section when we included additional control variables (Models 2 and 3). The order of birth was a significant predictor of the risk of C-section. The second to fourth children were significantly less likely to be born through C-section compared with the first child (reference group).

Spatial and socioeconomic factors

There was no significant difference in the risk of C-section for women living in urban and rural areas. However, there were marked differences in the risk of C-section among the administrative divisions. The risk of C-section in Sahiwal was similar to that in Bahawalpur (reference division). Rawalpindi and DG Khan showed a significantly lower risk of C-section, around 41 and 36%, compared with the risk in Bahawalpur (reference division). Further research is called for to analyse the specific factors leading to marked disparities in different geographical administrative units in Punjab. The women in the highest wealth quintile were almost 1.6 times more likely to undergo C-section (Model 3). Similarly, the risk of C-section also increased (in this case, significantly) with the wealth status of women.

Discussion

Multivariate logistic regression analysis showed that institutional variables including place of delivery and number of antenatal care visits had a significant impact on the rate of C-section. As the number of antenatal care visits increased, the risk of C-section decreased because the women were expected to become more informed about their pregnancy-related issues and take precautionary measures to avoid complications necessitating C-section. This is contrary to the common believe that access to healthcare services increases the likelihood of C-section (4). Unlike some other studies (10), the risk of

Table 2 Logistic regression of the effects of demographic, socioeconomic, institutional and spatial variables on C-section, MICS Punjab 2014

Variables	Model 1		Model 2		Model 3	
	Odds ratio (95% confidence interval)					
Maternal age at birth (yr)						
< 20	Ref	—	—	—	—	—
20–29	1.17	(0.75,1.82)	1.12	(0.71,1.77)	1.14	(0.72,1.81)
30–39	0.97	(0.61,1.54)	0.93	(0.58,1.50)	0.98	(0.61–1.57)
≥ 40	0.73	(0.41–1.31)	0.70	(0.38–1.27)	0.80	(0.44–1.46)
Maternal age at first marriage (yr)						
15–19	Ref	—	—	—	—	—
20–25	1.26**	(1.08–1.47)	1.27**	(1.08–1.48)	1.18*	(1.00–1.38)
26–30	1.80***	(1.41–2.30)	1.82***	(1.42–2.34)	1.62***	(1.26–2.10)
31–35	2.59***	(1.51–4.42)	2.72***	(1.58–4.68)	2.56***	(1.49–4.39)
Birth order of child						
1	Ref	—	—	—	—	—
2–4	0.84*	(0.73–0.96)	0.83**	(0.72–0.95)	0.83*	(0.72–0.96)
≥ 5	0.89	(0.68–1.18)	0.88	(0.67–1.17)	0.89	(0.67–1.17)
Place of delivery						
Public	Ref	—	—	—	—	—
Private	1.40***	(1.19–1.64)	1.36***	(1.16–1.60)	1.34***	(1.14–1.58)
No. of antenatal care visits						
1–5	Ref	—	—	—	—	—
6–12	1.57***	(1.37–1.81)	1.62***	(1.40–1.88)	1.49***	(1.28–1.73)
13–18	2.76***	(1.61–4.73)	3.01***	(1.76–5.14)	2.73***	(1.60–4.64)
≥ 18	1.82	(0.71–4.63)	1.81	(0.69–4.74)	1.60	(0.59–4.31)
Area						
Urban	Ref	—	—	—	—	—
Rural			0.92	(0.80–1.06)	0.89	(0.76–1.04)
Division						
Bahawalpur	Ref	—	—	—	—	—
DG Khan			0.36***	(0.25–0.51)	0.38***	(0.26–0.55)
Faisalabad			0.44***	(0.32–0.60)	0.42***	(0.31–0.57)
Gujranwala			0.57***	(0.43–0.76)	0.49***	(0.37–0.65)
Lahore			0.70*	(0.57–1.05)	0.62**	(0.46–0.84)
Multan			0.77	(0.57–1.05)	0.76	(0.55–1.03)
Rawalpindi			0.41***	(0.29–0.56)	0.35***	(0.25–0.49)
Sahiwal			1.03	(0.76–1.41)	1.01	(0.74–1.39)
Sargodha			0.46***	(0.33–0.64)	0.47***	(0.34–0.65)
Maternal education						
None/preschool	Ref	—	—	—	—	—
Primary					0.95	(0.77–1.17)
Middle					1.11	(0.87–1.43)
Secondary					1.15	(0.91–1.45)
Higher					1.21	(0.94–1.56)
Wealth index						
Lowest	Ref	—	—	—	—	—
Second					1.02	(0.77–1.35)
Middle					1.35*	(1.02–1.79)
Fourth					1.60**	(1.18–2.17)
Highest					1.65**	(1.17–2.31)
Constant	2.74***	(1.76–4.27)	1.51	(0.89–2.56)	2.20**	(1.23–3.93)
Observations	5211		5211		5209	
χ2	217.39		1323.04		3816.1	
Probability > χ2	0.0020		0.0090		0.0363	
Hosmer–Lemeshow χ2	18.38		9.52		6.69	
(Significance)	0.0186		0.3007		0.5702	

*P < 0.05, **P < 0.01, ***P < 0.001. MICS, Multiple Indicator Cluster Survey.

C-section was smaller in the private health facilities compared with public health facilities, possibly because fewer women could afford the high cost of C-section in the private health facilities. Maternal age was a risk factor for complications during pregnancy and it was estimated that women aged > 30 years at the time of birth were at higher risk of C-section compared with those aged < 20 years, as reported in previous studies (11,25). The risk of undergoing C-section decreased as the age of first marriage increased, supporting the long-held view that early marriages (15–19 years) are associated with birth complications (24–27). A significant number of studies has highlighted the risks involved in early marriages (21–23). Even though the effect of maternal age at birth on the C-section risk is not significant, the risk of C-section associated with older maternal age at birth is well documented (8,11,18). There was a negative association between birth order and the likelihood of C-section, indicating that the likelihood was greater for the first child. However, many studies have found that primiparous mothers are more likely to deliver through C-section (11,18). As the MICS Punjab 2014 data did not provide information about the frequency and number of pregnancies per woman, these issues were beyond the scope of this study.

The risk of C-section decreased with an increase in maternal education. Although this effect could not be precisely estimated in this study, there was strong empirical evidence to suggest that higher education was associated with lower risk of C-section. Maternal education was expected to affect the risk of C-section directly and indirectly. More-educated mothers are more informed about hygiene and health standards (29,30). Maternal education is also assumed to indirectly affect the risk of C-section through social status (9). More-educated women are less likely to undergo C-section, possibly because they belong to social groups that can afford better nutrition and are, therefore, less likely to suffer from the complications that necessitate C-section (4). Wealthier women were more likely to opt for C-section in our study, which contrasts with previous studies (4,16). There was a significant difference in the risk of C-section among the divisions in Punjab Province. The DG Khan division has the lowest while Rawalpindi is among the highest per capita income divisions in Punjab (13). Even though Rawalpindi and DG Khan differ widely in many ways, such as the level of economic development and the rate of school enrolment, both these divisions had the lowest incidence of C-section. It is plausible to believe that better access to and provision of health services explain the low C-section rate in Rawalpindi division (0.41 times lower than the Bahawalpur reference division). However, the low proportion of women in DG Khan (0.36 times lower than Bahawalpur) undergoing C-section counters the impression that lack of access to basic health care, distance and remoteness partly explain these findings, and this needs further investigation.

The present study had some limitations. First, it was cross-sectional, thus, we cannot draw any conclusions about causality between the factors associated with C-section. Second, this study used data from the MICS Punjab 2014, which are representative of Punjab Province; hence we cannot generalize the results at a national level. Third, it is not possible with the available data to establish whether the C-section was necessary.

In conclusion, we recommend that the Pakistani Government should facilitate access to healthcare facilities that are easily accessible, especially, to rural women. From programme and policy perspectives of healthcare interventions, it is imperative to investigate further the disparities among administrative divisions. Confronting health challenges at a microgeographic level will help develop public policy that better meets the goals of Punjab Health Sector Plan 2018, Punjab Economic Growth Strategy 2018 and Federal Government Vision 2025.

Prévalence et déterminants de la pratique de la césarienne au Pendjab, Pakistan

Résumé

Contexte : La césarienne est une intervention obstétricale pouvant sauver des vies qui permet de réduire la mortalité maternelle et d'améliorer la santé génésique. Bien que l'accouchement par voie basse demeure une méthode d'accouchement recommandée, sûre et peu coûteuse, la césarienne est parfois pratiquée sans être pour autant nécessaire, ce qui crée des problèmes de santé pour les femmes enceintes et leurs nouveau-nés.

Objectifs : La présente étude avait pour objectif de mesurer les effets d'un ensemble de variables institutionnelles, démographiques, socio-économiques et spatiales sur la pratique de la césarienne (n = 2424) au Pendjab (Pakistan).

Méthodes : Les données issues de l'enquête à indicateurs multiples menée au Pendjab en 2014 et une analyse de régression logistique multiple ont été utilisées. Une analyse a été menée à l'aide du logiciel STATA (version 12).

Résultats : Un âge maternel plus avancé lors du premier mariage, un nombre plus important de consultations prénatales, et des quintiles de richesse supérieurs étaient associés à un risque plus élevé de césarienne. Au Pendjab, les femmes étaient davantage susceptibles de donner naissance par césarienne dans les établissements de santé privés et aucune différence notable n'a été observée entre les zones urbaines et rurales. Une différence importante existait quant au risque de césarienne entre les différents districts du Pendjab. Par exemple, Dera Ghazi Khan et Rawalpindi affichaient le risque le plus bas en comparaison à Bahawalpur, le district de référence, ce qui s'explique en partie par des disparités de développement et la possibilité d'être pris en charge dans des établissements de soins de santé publics.

Conclusion : Le gouvernement devrait faciliter l'accès aux établissements de soins de santé dans les régions faciles d'accès, notamment pour les femmes vivant dans les zones rurales.

معدل انتشار الولادة القيصرية ومحدِّداتها في البنجاب، باكستان

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الخلاصة

الخلفية: تنقذ الولادة القيصرية حياة الأمهات وتنقص معدلات الوفيات بينهن وتحسِّن الصحة الإنجابية. ورغم أن الولادة المهبلية لا تزال من طرق الولادة الآمنة والهامة والقليلة التكاليف، فإن العملية القيصرية تجرى أحيانًا حتى عندما لا تستدعي الحاجة إجراؤها، مما يخلق تحديات صحية للحوامل ولأطفالهن حديثي الولادة.

الأهداف: هدفت الدراسة إلى تقدير تأثير مجموعة من المتغيرات المؤسسية والسكانية والاجتماعية الاقتصادية والمكانية في الولادة القيصرية، وأُجريت الدراسة على ٢٤٢٤ سيدة في البنجاب في باكستان.

طرق البحث: استخدم الباحثون بيانات من مسح عنقودي متعدد المؤشرات أُجري في البنجاب عام ٢٠١٤، ومن تحليل التحوُّف اللوجستي المتعدد. وقد أجروا التحليل باستخدام النسخة ١٢ من برنامج STATA.

النتائج: ترافقت المخاطر العالية للعملية القيصرية مع تقدم عمر الأم وقت زواجها، وبزيادة عدد الزيارات السابقة للولادة إلى المركز الصحي، وعلو الشريحة المئوية للثروة. وبدا احتمال أن تلد المرأة في البنجاب بعملية قيصرية أكبر في المرافق الصحية الخاصة، ولم يكن هناك فرق بين المناطق الريفية والحضرية. وكان هناك فرق ملحوظ في مخاطر العملية القيصرية باختلاف المقاطعات في البنجاب، فعلى سبيل المثال أبدت منطقتي ديرة غازي خان وراولبندي أقل المخاطر مقارنة بالمنطقة المرجعية في باهاوالبور، ويمكن تفسير هذا الاختلاف جزئيًا بالتفاوت في التطور وفي الوصول إلى المرافق الصحية العامة.

الاستنتاجات: يجب على الحكومة أن تسهِّل الوصول إلى مرافق الرعاية الصحية في المناطق التي تتاح فيها تلك المرافق، ولا سيّما للسيدات الريفيات.

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