Postpartum Contraception: a Comparative Study of Berlin Women with and without Immigration Background

Nutzung kontrazeptiver Methoden post partum – Berliner Frauen mit und ohne Migrationshintergrund im Vergleich

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Key words
- immigration
- postpartum period
- prevention/contraception
- acculturation

Schlüsselwörter
- Migration
- Wochenbett
- Verhütung
- Akkulturation

Deutsche Version unter: www.thieme-connect.de/ejournals/gebfra

received 8.6.2015
revised 13.7.2015
accepted 3.8.2015

Bibliography
DOI http://dx.doi.org/10.1055/s-0035-1557906
Geburtsh Frauenheilk 2015; 75: 915–922 © Georg Thieme Verlag KG Stuttgart · New York · ISSN 0016-5751

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Abstract

Research Questions: Are there differences in postpartum contraceptive use between women with and without immigration background? Do women more commonly use contraception following a high-risk pregnancy or caesarean section? What role does current breastfeeding play and, amongst immigrants, what is the effect of acculturation level on the frequency of contraceptive use?

Study Population and Methods: Data collection was carried out as part of a larger study in three Berlin delivery units using standardised interviews (questionnaires covering e.g. sociodemographics, immigration history/acculturation and use of antenatal care); telephone interviews comprising 6 questions on postpartum contraception, breastfeeding and postpartum complications were conducted on a sample of the study population six months after delivery.

Results: 247 women with, and 358 women without a background of immigration were included in the study (total study population n = 605, response rate 81.1%). 68% of 1st generation immigrants, 87% of 2nd/3rd generation women and 73% of women without immigration background (non-immigrants) used contraception. In the logistical regression analysis 1st generation immigrants were less likely than non-immigrants to be using contraception six months postpartum, and 1st generation immigrants with low acculturation level were significantly less likely to use contraception than 2nd/3rd generation women with low acculturation level.

Conclusion: In the extended postpartum period there was no major difference in contraceptive use between immigrants in general and non-immigrants. It remains unclear whether the differing contraceptive behaviour of 1st generation immigrants is the result of less access to information, sociocultural factors or differing contracep-

Zusammenfassung

Fragestellungen: Gibt es Unterschiede bei der Verwendung von Verhütungsmitteln zwischen Frauen mit und ohne Migrationshintergrund nach der Entbindung? Nutzen Frauen mit einer Risikoschwangerschaft oder nach Sectio häufiger Verhütungsmittel? Welchen Einfluss hat aktuelles Stillen und innerhalb des Migrantinnenkollektivs der Grad der Akkulturation auf die Kontrazeptiva-Anwendungshäufigkeit?

Patientinnenkollektiv und Methodik: Basisdatenerhebung im Rahmen einer größeren Studie in 3 Berliner Geburtskliniken anhand standardisierter Interviews (Fragebogensets zu soziodemografischen Daten, Migration/Akkulturation, Nutzung der Schwangerenvorsorge u. a.); mit Frauen einer Teilstichprobe wurden 6 Monate nach der Geburt Telefoninterviews (6 Fragen) zur Kontrazeption post partum, zum Stillen und zu Wochenbettkomplikationen geführt.

Ergebnisse: 247 Frauen mit im Vergleich zu 358 Frauen ohne Migrationshintergrund konnten einbezogen werden (Gesamtkollektiv n = 605, Responserate 81,1%). 68% der Migrantinnen der 1. Generation, 87% der Frauen der 2./3. Generation mit Migrationshintergrund und 73% der Frauen ohne Migrationshintergrund nutzten eine Kontrazeptionsmethode. Die logistische Regressionsanalyse ergab, dass Migrantinnen der 1. Generation im Vergleich zu Frauen ohne Migrationshintergrund eine geringere Chance zeigen, Verhütungsmethoden 6 Monate nach der Geburt anzuwenden. Migrantinnen der 1. Generation mit niedriger Akkulturation nutzten signifikant seltener kontrazeptive Methoden im Vergleich zu wenig akkulturierten Frauen der 2./3. Generation.

Schlussfolgerungen: Zwischen Frauen mit Migrationshintergrund und nicht migrierten Frauen ergaben sich kaum Unterschiede bei der Verwendung von Verhütungsmitteln in der erweiterten Postpartalperiode. Ob das andere Nutzungsver-

tive requirements and further targeted, qualitative study is required.

halten der Migrantinnen der 1. Generation ein Effekt der Zugänglichkeit zu Informationen über Verhütung, von soziokulturellen Faktoren oder eines unterschiedlichen Bedarfs an Kontrazeptiva ist, sollten weitere, stärker qualitativ ausgerichteten Untersuchungen klären.

Introduction

Sufficiently long birth intervals reduce neonatal and maternal morbidity and mortality, whereas shorter birth intervals are associated with increased risk to mother and child [1,2]. The immediate postpartum period and the early months following delivery provide important opportunities for contraceptive counselling, which should include accurate information on the various effective methods of contraception [3]. Counselling should ideally take place in the first few postpartum weeks, either before discharge from the delivery unit or at the first postnatal check-up in the gynaecology practice [4]. According to current data, use of all common methods of contraception seems acceptable during the postpartum period and during breastfeeding, with allowance for the usual individual contraindications. Combined oral contraceptives should only be commenced three weeks after delivery. No negative effects on breast milk production or early childhood development have been reported to date [3,5]. Deciding on a contraceptive method in the postpartum period is an important process that is influenced by various medical and patient factors [5,6]. To date there has been little systematic study of the sociodemographic, cultural and immigration-related factors that may influence this choice and overall contraceptive use in the first six to eight postpartum weeks and the early months following delivery. Currently there are approx. 15 million people living in Germany with immigration background (defined as either having immigrated oneself, or being direct descendant from an immigrant) [7]. Considering the multicultural reality of modern-day medical care in German cities and urban centres, current obstetric and gynaecological research and counselling practice must take the particular issues affecting women with a background of immigration into account. We undertook a comparative study of women in the postpartum period with and without immigration background to answer the following research questions:

1. Are there differences in contraceptive use between the two groups?
2. Are women who have had a caesarean section or a high-risk pregnancy more likely to use contraception at six months post partum?
3. Does care and counselling by a midwife (midwifery care) in the postpartum period influence contraceptive behaviour?
4. What role does current breastfeeding play in the use of various contraceptives?
5. Within the immigrant population, does the level of acculturation influence the prevalence of contraceptive use six months after delivery?

Methods

Data collection took place as part of a larger DFG-funded study (GZ: DA 1199/2-1) in three Berlin hospital delivery units (Charité/Campus Virchow-Klinikum, Vivantes-Klinikum am Urban, Vivantes-Klinikum Neukölln) using standardized interviews supported by questionnaires [8]. The primary data were linked to so-called perinatal data collected by the delivery units. This perinatal data is routinely collected throughout Germany and analysed centrally as part of quality control.

Immigration status/acculturation

The determination of immigration status was carried out as recommended by Schenk et al. (2006) based on information pertaining to parent's country of birth, duration of stay in Germany, and mother tongue [9]. Women with immigration background were subdivided as follows: 1st generation immigrants = women who themselves had immigrated; 2nd generation women = women whose parents had immigrated; 3rd generation women = women and both their parents were born in Germany, but 1st language not German. Women with only one parent born abroad were categorized as non-immigrants. All other study patients were also classified as non-immigrants. Acculturation was measured using the Frankfurt Acculturation Scale (FRAKK), a validated, 15-item questionnaire [10].

Inclusion criteria

All women who were admitted to one of the three participating hospital delivery units, delivered a live birth from 24 weeks gestation onwards within the study period, were at least 18 years of age at the time of delivery and were permanently resident in Germany when included in the study.

Evaluation time points

Data were collected from January 2011 to January 2012 in the labour and postnatal wards of the above mentioned hospitals by trained project workers using standardized questionnaires. Data were supplemented by information taken from the maternal antenatal record and linked to validated perinatal data documented by the delivery units.

Data collection occurred at three defined time points (T1–T3).

T1 – labour ward: On admission to the delivery unit study participants were questioned on sociodemographics, immigration and use of antenatal services (40 questions). The questionnaires were available in German and eight other languages relevant to immigrants living in Berlin (Turkish, Russian, Arabic, Polish, Kurdish, Spanish, English, French). Interpreter services were used if necessary.

T2 – postnatal ward: The second questionnaire (7 questions) on breastfeeding and health behaviour during pregnancy was carried out on the postnatal wards of the three study hospitals, usually on the 2nd or 3rd postpartum day.

T3 – six months post partum: Telephone interviews (6 questions) covering breastfeeding, postpartum complications and postpartum contraception were conducted on a sample of the T1/T2 group (only women giving birth in Charité/Campus Virchow-Klinikum between 10.01.2011 and 09.05.2011) six months after delivery. Due to organisational and confidentiality issues as well as limited financial resources, this questionnaire could only be applied to a (representative) partial sample (T3) of the total study population (T1/T2).

Table 1 Sociodemographic data of women interviewed six months post partum (study population T3, n = 605).

	1st generation immigrants	2nd + 3rd generation women	Non-immigrants	Total
n =	177	70	358	605
Maternal age at delivery (years)				
▸ 18–24	18.1%	24.3%	15.1%	17.0%
▸ 25–29	24.3%	35.7%	18.4%	22.2%
▸ 30–34	31.6%	21.4%	32.2%	31.4%
▸ 35–49	26.0%	18.6%	33.2%	29.4%
Parity before current delivery				
▸ nulliparous	40.7%	38.6%	60.1%	51.9%
▸ primip-/biparous	46.3%	54.3%	37.2%	41.8%
▸ multiparous	13.0%	7.1%	2.8%	6.3%
Smoking during pregnancy				
▸ regular or occasional	14.7%	34.8%	13.8%	16.5%
				missing = 3
Highest attained education level				
▸ no school leaving certificate/primary school	15.8%	7.1%	2.0%	6.6%
▸ intermediate school leaving certificate	43.5%	80.0%	39.2%	45.2%
▸ high school/university graduation	40.7%	12.9%	58.8%	48.2%
				missing = 1
Monthly net household income				
▸ < 900 €	19.9%	14.3%	7.6%	11.9%
▸ 900–1 500 €	44.7%	45.7%	20.5%	30.4%
▸ > 1 500–2 600 €	21.1%	31.4%	26.3%	25.5%
▸ > 2 600 €	14.3%	8.6%	45.6%	32.3%
				missing = 32
Acculturation				
▸ low	52.7%	43.0%		
▸ high	47.3%	57.0%		
				missing = 15
German language proficiency				
▸ "moderate" to "very good"'	83.6%	100.0%	100.0%	95.3%
				missing = 8

Statistical analysis

Descriptive and multivariate analyses were performed on contraceptive use six months after delivery. Logistic regression was used for multivariate analysis. There was no evidence of collinearity or interaction for the variables used in the logistic regression models. Study participants with missing data were excluded from the respective descriptive or multivariate analyses. Thus fewer questionnaires/perinatal data sets were available for some research questions. Numbers are shown in the results section. Statistics software SAS 9.2 was used for all calculations. Statistical significance was set at $p < 0.05$.

Ethics/confidentiality

Confidentiality requirements were adhered to for the questionnaires and when linking the primary and secondary data. The study was approved by the ethics committee of the Berlin Charité.

Results

Response rate

8157 women from the three delivery units were eligible for the standardized interview T1 (labour ward admission). 235 (2.9%) did not fulfil inclusion criteria. Of the remaining women 7100 completed the questionnaire, a response rate of 89.6% of the total study population. 53.2% of women interviewed had a background of immigration. The T1 data on sociodemographics and immigration/acculturation were used in the analysis of the subgroup at T3. Only the women in this subgroup were interviewed by telephone at six months post partum. Because of their small number and similar results, 3rd generation women were grouped together with 2nd generation women for further analysis.

142 of 747 women who had consented to telephone interview six months after delivery and had provided a telephone number could not be interviewed at the third evaluation time point (T3). The most common reasons given on the dropout form included "women not reachable" (n = 76; 53.5%) and "telephone number incorrect (no longer correct)" (n = 57; 40.1%). Other reasons were given for nine women (e.g. communication problems). Thus data on 247 women with, and 358 women without immigration background were available for comparative analysis (total study population n = 605, response rate 81.1%).

Sociodemographics

Sociodemographic data on the study groups are seen in **Table 1**. 2nd generation women were younger (mean age 29.3 years) than 1st generation immigrants (mean age 31.2 years) and non-immigrants (mean age 32.3 years). During the study period 60% of non-immigrants gave birth to their first child compared to 40% of immigrants (1st and 2nd/3rd generation). 2nd/3rd generation women were smokers more than twice as frequently as other groups. Non-immigrants had higher education levels and were

Table 2 Contraception at six months post partum.

		1st generation immigrants	2nd + 3rd generation women	Non-immigrants	Total
Contraception: yes	n	118	60	261	439
	%	68.2	87.0	73.1	73.3
					missing = 6
Method:	n	117	60	261	438
▶ oral contraceptive	%	29.9	50.0	39.1	38.1
▶ coil (IUD)	%	13.7	16.7	9.2	11.4
▶ condom (+ various [v])	%	47.0	33.3 [v]	45.2	43.8
▶ various*	%	9.4		6.5	6.7

* vaginal ring, 3-monthly injection, sterilisation (female, male), coitus interruptus, natural family planning, others

Table 3 Adjusted odds ratios for contraceptive use at six months post partum.

n = 563 Events = 409	n	OR	95%-CI	p-value
Immigration status				
▶ non-immigrants	338	1.00		
▶ 1st generation immigrants	157	0.55	0.34–0.90	0.0178
▶ 2nd + 3rd generation women	68	2.15	0.94–4.94	0.0699
Age groups (years)				
▶ 18–24	96	1.00		
▶ 25–29	126	0.74	0.35–1.55	0.4231
▶ 30–34	181	0.41	0.20–0.85	0.0164
▶ 35–49	160	0.18	0.09–0.40	< 0.0001
Parity before current delivery				
▶ nulliparous	296	1.00		
▶ primip-/biparous	236	1.45	0.93–2.24	0.0990
▶ multiparous	31	4.18	1.34–13.06	0.0140
Breastfeeding at time of interview				
▶ not/no longer breastfeeding	270	1.00		
▶ still breastfeeding	293	0.77	0.50–1.19	0.2454
Smoking				
▶ no	468	1.00		
▶ yes	95	0.50	0.28–0.88	0.0158
Level of education				
▶ high	279	1.00		
▶ middle	255	0.74	0.44–1.24	0.2486
▶ low	29	1.05	0.37–2.96	0.9243
Net household income				
▶ > 2 600 €	184	1.00		
▶ > 1 500–2 600 €	144	1.97	1.12–3.49	0.0194
▶ 900–1 500 €	170	1.16	0.62–2.16	0.6523
▶ < 900 €	65	0.60	0.28–1.32	0.2071

Tjur r^2: 0.1073

more likely to be in the high-income group. 16.4% of 1st generation immigrants had little or no German language proficiency.

Influence of immigration factors

When interviewed at six months post partum, 68% of 1st generation immigrants, 87% of 2nd/3rd generation women and 73% of non-immigrants were using contraception. German language proficiency did not seem to play a significant role in contraceptive use: 75% (n = 21) of 1st generation immigrants with no or little German language skills used contraception compared to 68.6% (n = 96) of those with moderate to very good German skills. The various methods of contraception used are shown in **Table 2**.

On interview at six months post partum 160 women were not using contraception. The most common reason, given by 14% of women in this subgroup, was the desire for another child. 9.1% stated a failed partnership and 22.4% had not yet got around to it.

Effects of sociodemographic factors

There were a number of statistically significant differences on logistic regression analysis of contraceptive use at six months post partum. 1st generation immigrants were less likely to be using contraception than non-immigrants. Higher age (≥ 30 years) was also associated with a lower chance of contraceptive use. Smokers were less likely to be using contraception than non-smokers. Multiparous women and women with a household income of 1500 to 2600 Euro were more likely to be using contraception (**Table 3**).

In addition, other factors were analysed for effect on contraceptive use at six months post partum including "mode of delivery", "high risk pregnancy", "midwifery postpartum care" and "current breastfeeding". No statistically significant differences between immigrants and non-immigrants were found for these factors.

Influence of acculturation and religion

Of the women with immigration background, 1st generation immigrants with low levels of acculturation were significantly less likely to use contraception than 2nd/3rd generation women with low levels of acculturation (**Tables 4** and **5**).

A further multivariate logistic regression was carried out according to Moreau et al. (2013) [11] to test the influence of reported religious affiliation on contraceptive behaviour six months after delivery. No differences in odds ratios were found between the Christian, Muslim and none/other religious groups.

Discussion

The direct postpartum period and the early months following delivery constitute a unique phase of life in which numerous somatic, psychological, social and familial adjustments occur. Nevertheless research on this phase of life in Germany and the German speaking countries is scarce. There are no current publications on postpartum contraception. The extended postpartum period provides a convenient opportunity for maternal health counselling since women not only have frequent contact to health services, but also are highly motivated to prevent an immediate subsequent pregnancy. Medical advice and the initiation of contraception should prevent unwanted pregnancy and short pregnancy intervals which are associated with negative outcomes for mother and child, e.g. increased risk of preeclampsia, premature birth and low birth weight (LBW) [5, 12]. The two most important factors for the choice of contraceptive method and its application are safety and ease of use [13]. Contrary to the study by Lauria et al. (2014) [14] the results of our Berlin-based study show differences in contraceptive use between women with and without immigration background: 1st generation immigrants were less likely to be using contraception. In this group more women were not using contraception at six months post partum. Helström et al. (2013) in their Swedish survey similarly reported that immigrants had less experience with various contraceptives than women born in Sweden [15]. Results published by Poncet et al. (2013) from their French study showed significantly less contraceptive use amongst 1st and 2nd generation immigrants compared to non-immigrants. The authors found that socioeconomic factors were a potential barrier to the use of contraceptives as low levels of education and unemployment were associated with reduced contraceptive use [16]. In a large registry study (approx. 900 000 women of whom 130 000 were immigrants) Omland et al. (2014) report similar contraceptive use in immigrants compared to women born in Norway irrespective of the postpartum period. More Norwegian-born women (38%) used hormonal contraceptives than women belonging to various immigrant groups (15–24%) [17].

We postulated that a difficult pregnancy (classification as "high-risk pregnancy") or an operative delivery, particularly caesarean section, could be motivating factors for using postpartum contraception. Contrary to the findings of Altinbas et al. (2014) [18] and Romero-Gutierrez et al. (2003) [19] there was no such association in our study population. We found no internationally published studies on the effects of midwifery care and counselling in the postpartum period on contraceptive use. In a data analysis study, Lauria et al. (2014) reported that in Italy women who received family planning advice in the postpartum period used effective contraception more often, and this applied to both native Italians and immigrants [14]. Lopez et al. (2012) however, in a randomised controlled study, found that only half of investigated postpartum interventions lead to reduced rates of repeat pregnancy or increased contraceptive use [4]. We showed no significant positive effect of outpatient postpartum midwifery care on contraceptive use in any of the three study groups. Specific advice on contraception was however only assumed; women in our study were not questioned on the content of midwifery advice.

Contraceptive use was also not influenced by breastfeeding status of women when interviewed by telephone. At six months post partum 52% of women interviewed were breastfeeding. Breastfeeding only provides reliable contraception in the first 10 weeks following delivery [20]. 1.7% of breastfeeding women who have unprotected sex will fall pregnant in the first six months [21]. Use of effective contraceptives is thus important regardless of breastfeeding.

While education level and German language proficiency did not play a role, 1st generation immigrants with low acculturation level used contraception less often than 2nd/3rd generation immigrants. Maire et al. (1999) investigated whether the level of integration into host societies is associated with the use of various contraceptives six months after discharge from a delivery unit. The results of 51 interviews of women from Turkey, the sub-Saharan region and the Maghreb showed no significant association with continuous contraceptive use at six months postpartum. Women who had lived in France for fewer than 10 years used contraceptives more often. The authors concluded that more recent immigrants were more open and receptive to suggestions of delivery unit medical staff [22]. In the above-mentioned Norwegian study (Omland et al. 2014), in addition to age and level of education, length of stay in Norway was also a predictor of hormonal contraceptive use in immigrants, which increased in the first five years after immigration [17].

Strengths and limitations of the study

We specifically collected data on immigration background, acculturation and socioeconomic status and analysed the effects of these parameters, which many internationally published register-based studies have not done. The 90% response rate is another strength. The use of telephone interviews is a possible methodological weakness since there was no way of checking the accuracy of these data. Feelings of guilt and shame are not uncommon when confronted with questions on sexuality and contraception and therefore distortion of information, conscious or unconscious, is possible. Seen from this perspective, however, telephone interviews are rather advantageous because of relative anonymity. Lastly, it remains uncertain whether the sample we analysed is a representative one. Our study is nevertheless the first systematic quantitative scientific investigation of this important subject in the German-speaking world.

Conclusions

There was scarcely any difference in the use of contraceptives when comparing immigrant and non-immigrant women in Berlin. The only difference involved 1st generation immigrants, few-

Table 4 Influence of various factors on contraceptive use six months after delivery.

			Contraception "yes" in % (n)		
			1st generation immigrants	2nd + 3rd generation women	Non-immigrants
Acculturation level	low		67.4 (58) **	96.3 (26) Ref.	–
	high		70.5 (55) n.s.	78.4 (29) Ref.	–
	low	oral contraceptive	34.5 (20)	53.9 (14)	–
		condom	39.7 (23)	30.8 (11)	–
		other	25.9 (15)	15.4 (4)	–
	high	oral contraceptive	23.6 (13)	46.7 (14)	–
		condom	58.2 (32)	33.3 (10)	–
		other	18.2 (10)	20.0 (6)	–
Mode of delivery	vaginal		70.9 (83) n.s.	87.5 (42) n.s.	75.4 (147) Ref.
	Caesarean section		62.5 (35) n.s.	85.7 (18) n.s.	70.4 (114) Ref.
	vaginal	oral contraceptive	28.9 (24)	47.6 (20)	39.9 (59)
		condom	43.4 (36)	33.3 (14)	49.3 (73)
		other	27.7 (23)	19.1 (8)	10.8 (16)
	Caesarean section	oral contraceptive	31.4 (11)	52.6 (10)	37.4 (43)
		condom	54.3 (19)	26.3 (5)	40.0 (46)
		other	14.3 (5)	21.1 (4)	22.6 (26)
High risk pregnancy	no		71.4 (85) n.s.	87.2 (41) n.s.	74.5 (180) Ref.
	yes		60.4 (32) n.s.	86.4 (19) n.s.	69.8 (81) Ref.
	no	oral contraceptive	28.2 (24)	48.8 (20)	42.9 (78)
		condom	49.4 (42)	36.6 (15)	45.6 (83)
		other	22.4 (19)	14.6 (6)	11.5 (21)
	yes	oral contraceptive	31.3 (10)	50.0 (10)	29.6 (24)
		condom	40.6 (13)	20.0 (4)	44.4 (36)
		other	28.1 (9)	30.0 (6)	25.9 (21)
Midwifery postpartum care	no		71.4 (50) n.s.	89.2 (33) n.s.	69.8 (44) Ref.
	yes		66.0 (68) n.s.	84.4 (27) n.s.	73.8 (217) Ref.
	no	oral contraceptive	40.0 (20)	41.2 (14)	47.8 (22)
		condom	30.0 (15)	35.3 (12)	37.0 (17)
		other	30.0 (15)	23.5 (8)	15.2 (7)
	yes	oral contraceptive	22.1 (15)	59.3 (16)	36.9 (80)
		condom	58.8 (40)	25.9 (7)	47.0 (102)
		other	19.1 (13)	14.8 (4)	16.1 (35)
Current breastfeeding	no		66.2 (51) n.s.	89.4 (47) n.s.	77.2 (129) Ref.
	yes		69.8 (67) n.s.	81.8 (22) n.s.	69.5 (132) Ref.
	no	oral contraceptive	37.3 (19)	51.2 (22)	50.0 (65)
		condom	43.1 (22)	25.6 (11)	32.3 (42)
		other	19.6 10)	23.3 (10)	17.7 (23)
	yes	oral contraceptive	23.9 (16)	44.4 (8)	27.8 (37)
		condom	49.3 (33)	44.4 (8)	57.9 (77)
		other	26.9 (18)	11.1 (2)	14.3 (19)
All					
Religion	Christian			74.5 (164)	
	none/other			67.0 (140)	
	Muslim			79.4 (135)	
	Christian	oral contraceptive		35.8 (59)	
		condom		52.7 (87)	
		other		11.5 (19)	
	none/other	oral contraceptive		34.8 (49)	
		condom		45.4 (64)	
		other		19.9 (28)	
	Muslim	oral contraceptive		43.4 (59)	
		condom		30.9 (42)	
		other		25.7 (35)	

Fisher's Exact Tests: Ref. = Referenz, ** $p < 0.01$, n.s. = nicht signifikant

er of whom were using contraception at six months post partum. Factors such as mode of delivery, breastfeeding and midwifery postpartum care had no influence on contraceptive behaviour. Level of acculturation affected frequency of contraceptive use among immigrants at six months post partum.

Choice of contraceptive method post partum is influenced by multiple factors including medical history, hormonal status, patient preference, breastfeeding and desired level of contraceptive certainty/effectiveness. It remains unclear whether the differing contraceptive behaviour of 1st generation immigrants is the re-

Table 5 Crude (unadjusted) and adjusted odds ratios for the influence of various factors on contraceptive use six months after delivery (supplement to **Table 4**).

	n	OR	95%-CI	p-value
Higher level of acculturation*				
▶ crude	240	0.89	0.50–1.59	0.6962
▶ adjusted**	240	0.92	0.45–1.88	0.8279
Mode of delivery				
▶ crude	563	0.91	0.82–1.01	0.0643
▶ adjusted**	563	0.93	0.83–1.05	0.2321
High risk pregnancy				
▶ crude	562	0.86	0.58–1.28	0.4564
▶ adjusted**	562	1.06	0.68–1.63	0.8040
Midwifery postpartum care				
▶ crude	563	0.96	0.58–1.60	0.5727
▶ adjusted**	563	0.99	0.59–1.64	0.8835
Current breastfeeding				
▶ crude	563	0.78	0.54–1.14	0.1950
▶ adjusted**	563	0.77	0.50–1.19	0.2454
Religion none/other***				
▶ crude	563	0.67	0.43–1.02	0.0634
▶ adjusted**	563	0.65	0.41–1.05	0.0762
Religion Muslim***				
▶ crude	563	1.19	0.73–1.94	0.4934
▶ adjusted**	563	1.41	0.72–2.77	0.3166

* only women of the 1st and 2nd/3rd generation; ** adjusted for immigration status, age group, parity, schooling, household income, smoking; *** reference = religion: Christian

sult of less access to relevant information or actual differing requirements for contraception [23–25]. Further qualitative study of this question is required. Postpartum contraceptive counselling is important, however, because even among 1st generation immigrants it improves the likelihood of optimal birth intervals [5].

Conflict of Interest

None.

References

1 *Birkhäuser M, Hadji P, Imthurn B et al.* Kontrazeption post partum. Frauenarzt 2014; 55: 1110–1113
2 *Sober S, Schreiber CA.* Postpartum contraception. Clin Obstet Gynecol 2014; 57: 763–776
3 *Tepper NT, Curtis KM, Jamieson DJ et al.* Update to CDC's U.S. Medical Eligibility Criteria for Contraceptive Use, 2010: revised recommendations for the use of contraceptive methods during the postpartum period. MMWR Morb Mortal Wkly Rep 2011; 60: 878–883
4 *Lopez LM, Hiller JA, Grimes DA et al.* Education for contraceptive use by women after childbirth. Cochrane Database Syst Rev 2012; 8: CD001863
5 *De Bocanegra HT, Chang R, Howell M et al.* Interpregnancy intervals: impact of postpartum contraceptive effectiveness and coverage. Am J Obstet Gynecol 2014; 10: 311.e1–311.e8
6 *Sober S, Schreiber CA.* Postpartum contraception. Clin Obstet Gynecol 2014; 57: 763–776
7 *Statistisches Bundesamt, Hrsg.* Zensus 2011. Bevölkerung Bundesrepublik Deutschland am 9. Mai 2011. Wiesbaden: Statistisches Bundesamt; 2013
8 *David M, Borde T, Brenne S et al.* Comparison of perinatal data of immigrant women of Turkish origin and German women. Results of a prospective study in Berlin. Geburtsh Frauenheilk 2014; 74: 441–448
9 *Schenk L, Bau AM, Borde T et al.* Mindestindikatorensatz zur Erfassung des Migrationsstatus. Empfehlungen für die epidemiologische Praxis. Bundesgesundheitsbl Gesundheitsforsch Gesundheitsschutz 2006; 9: 853–860
10 *Bongard S, Pogge SF, Arslaner H et al.* Acculturation and cardiovascular reactivity of second-generation Turkish migrants in Germany. J Psychosom Res 2002; 53: 795–803
11 *Moreau C, Trussell J, Bajos N.* Religiosity, religious affiliation and patterns of sexual activity and contraceptive use in France. Europ J Contracept Reprod Health Care 2013; 18: 168–180
12 *Gemmil A, Lindberg DL.* Short interpregnancy intervals in the United States. Obstet Gynecol 2013; 122: 64–71
13 *BZgA – Bundeszentrale für gesundheitliche Aufklärung, Hrsg.* Verhütungsverhalten Erwachsener. Ergebnisse der Repräsentativbefragung 2011. Köln: BZgA; 2011: 13–18
14 *Lauria L, Donati S, Spinelli A et al.* The effect of contraceptive counselling in the pre and post-natal period on contraceptive use at three months after delivery among Italian and immigrant women. Ann Ist Super Sanita 2014; 50: 54–61
15 *Helström L, Odlind V, Zätterström C et al.* Abortion rate and contraceptive practices in immigrant and native women in Sweden. Scand J Public Health 2003; 31: 405–410
16 *Poncet LC, Huang N, Rei W et al.* Contraceptive use and method among immigrant women in France: Relationship with socioeconomic status. Europ J Contracept Reprod Health Care 2013; 18: 468–479
17 *Omland G, Ruths S, Diaz E.* Use of hormonal contraceptives among immigrant and native women in Norway: data from the Norwegian Prescription Database. BJOG 2014; 121: 1221–1228
18 *Altinbas KS, Tekin YB, Dilbaz B et al.* Impact of having a high-risk pregnancy on future postpartum contraceptive method choice. Women Birth 2014; 27: 254–258
19 *Romero-Gutiérrez G, Garcia-Vazquez MG, Huerta-Vargas LF et al.* Postpartum contraceptive acceptance in León, Mexico: a multivariate analysis. Europ J Contracept Reprod Health Care 2003; 8: 210–216
20 *Huch R.* Stillen. In: Schneider H, Husslein P, Schneider KTM, Hrsg. Geburtshilfe. Berlin, Heidelberg: Springer; 2000: 951–966
21 *Short RV, Renfree MB, Shaw G et al.* Contraceptive effects of extended lactational amenorrhoea: beyond the Bellagio Consensus. Lancet 1991; 337: 715–717
22 *Maire E, Ecochard R, Broussard P.* [From the prescription of contraceptives to their application. A study of the on-going use of contraceptive methods in immigrant circles during the post-partum period]. Contracept Fertil Sex 1999; 27: 625–632

23 *Spycher C, Sieber C.* Antikonzeption bei Migrantinnen. Therap Umschau 2001; 58: 552–554
24 *Helffrich C, Klindworth H, Kruse J.* Frauen leben. Familienplanung und Migration im Lebenslauf. Köln: Bundeszentrale für gesundheitliche Aufklärung; 2011: 117–119
25 *Paraiso Torras B, Maldonado Del Valle MD, Lopez Munoz A et al.* [Contraception in immigrant women: influence of sociocultural aspects on the choice of contraceptive method]. Semergen 2013; 39: 440–444