

Smoking during pregnancy

Introduction

Maternal smoking during pregnancy may have a serious impact on the development of the unborn child (DKFZ 2010; Dudenhausen 2009; DiFranza et al. 2004). Harmful substances that are contained in tobacco smoke reach the bloodstream of the child via the placenta and restrict the supply of oxygen and nutrients. In addition, they impair the formation, maturation and differentiation of nerve cells which can lead to developmental disorders in organs (DKFZ 2010).

Smoking during pregnancy is linked with an increased risk of premature birth, miscarriage and stillbirth (Mund et al. 2013; Rogers 2008). Furthermore, children of mothers who smoked during pregnancy are often smaller at birth, have lower birth weight and a smaller head circumference than children of non-smokers. They also suffer more frequently from physical deformities such as cleft lip and palate (orofacial cleft) and they are more likely to die of sudden infant death syndrome - SIDS (Hackshaw et al. 2011; DKFZ 2015; Rogers 2008; Adgent 2006).

Over the further course of their lives, affected children also have a greater risk of suffering from diabetes mellitus, respiratory diseases and high blood pressure (Rogers 2008; Pattenden et al. 2006; Montgomery, Ekblom 2002).

Indicator

Whether mothers smoked during pregnancy was surveyed as part of KiGGS wave 1 in the telephone parental interview using the following question: "Did the mother of the child smoke during the pregnancy?" The response categories were: "Yes, regularly", "Yes, now and then" and »Never«. The affirmative answers have been summarised for these present analyses.

The tables show the percentage of mothers of 0 to 6-year-old children who smoked during pregnancy. The results are presented separately according to gender and social status.

Key statements

- ▶ The proportion of mothers who smoked during pregnancy is 12.1%.
- ▶ A social gradient can be identified for smoking among pregnant women: the higher the social status of the family the lower the percentage of mothers who smoked during pregnancy.

Classification of the results

In KiGGS wave 1 the percentage of mothers who smoked during pregnancy is 12.1 %. When stratified according to social status a clear social gradient is to be observed. The higher the social status of the family the lower the percentage of mothers who smoked during pregnancy.

Similar tendencies regarding the smoking behaviour of pregnant women have been reported by other studies conducted in Germany. Accordingly, in the nationwide Perinatal Survey 2007 – 2011, 11.2 % of women reported having smoked daily during pregnancy (Scholz et al. 2013). More current data from the 2014 School Entrance Survey (Schuleingangsuntersuchung) in Saxony-Anhalt revealed a somewhat higher percentage of smoking among pregnant women at 16.6 % (Landesamt für Verbraucherschutz Sachsen-Anhalt 2014). In contrast, a significantly lower percentage figure was established in a special evaluation by the Bavarian Working Group for Quality Assurance in In-Patient Care (Bayerische Arbeitsgemeinschaft für Qualitätssicherung in der stationären Versorgung). Here the percentage of women who smoked at least one cigarette per day during their pregnancy was 5% (Bayerisches Landesamt für Gesundheit und Lebensmittelsicherheit 2015).

Generally, a downward trend in the prevalence of smoking during pregnancy is to be observed. Thus, both when comparing the data from KiGGS 1 with those from the KiGGS baseline study from 2003 – 2006 and the data from the German Perinatal Surveys of 1995 – 1997 and 2007 – 2011, a fall in the percentage of women who smoked during pregnancy can be found (Bergmann et al. 2007; Scholz et al. 2013).

The strongly pronounced differences according to social status that were observed in KiGGS wave 1, are also to be found in other studies (Landesamt für Verbraucherschutz Sachsen-Anhalt 2014; DKFZ 2009; Schneider et al. 2007). In addition, in various surveys, clear differences are to be seen in connection with education (Landesamt für Verbraucherschutz Sachsen-Anhalt 2014; Gilman et al. 2008). More highly educated women therefore are much less likely to smoke during pregnancy than less well-educated women.

Viewed overall, maternal smoking during pregnancy is a significant, avoidable risk factor with regard to the health development of the unborn child. Expectant mothers should therefore be consistently informed by gynaecologists and midwives about the consequences of tobacco consumption and be given support to stop smoking.

Note: A detailed description of the study as well as methodological notes can be found on the KiGGS study website at www.kiggs-studie.de - as well as in Lange et al. (2014).

Bibliography

- Adgent MA (2006) Environmental tobacco smoke and sudden infant death syndrome: a review. *Birth Defects Res B Dev Reprod Toxicol* 77(1):69-85
- Bayerisches Landesamt für Gesundheit und Lebensmittelsicherheit (2015) Rauchen und Nichtrauchen in Bayern – Update 2015. Gesundheitsreport Bayern. www.lgl.bayern.de/publikationen (Accessed: 03/21/2016)
- Bergmann KE, Bergmann RL, Ellert U et al. (2007) Perinatale Einflussfaktoren auf die spätere Gesundheit. *Bundesgesundheitsblatt – Gesundheitsforschung – Gesundheitsschutz* 50(5/6):670-676. www.edoc.rki.de (Accessed: 03/21/2016)
- DKFZ – Deutsches Krebsforschungszentrum (Publ) (2009) *Tabakatlas Deutschland 2009*. Steinkopff Verlag, Heidelberg
- DKFZ – Deutsches Krebsforschungszentrum (Publ) (2010) *Schutz der Familie vor Tabakrauch*. Heidelberg <https://www.dkfz.de/de/tabakkontrolle/> (Accessed: 03/21/2016)
- DKFZ – Deutsches Krebsforschungszentrum (Publ) (2015) *Tabakatlas Deutschland 2015*. Pabst Science Publishers, Lengerich
- DiFranza JR, Aligne CA, Weitzman M (2004) Prenatal and postnatal environmental tobacco smoke exposure and children's health. *Pediatrics* 113(4 Suppl):1007-1015
- Dudenhausen JW (Publ) (2009) *Rauchen in der Schwangerschaft: Häufigkeit, Folgen und Prävention*. Urban & Vogel, München
- Gilman SE, Breslau J, Subramanian SV et al. (2008) Social factors, psychopathology, and maternal smoking during pregnancy. *Am J Public Health* 98(3):448-453
- Hackshaw A, Rodeck C, Boniface S (2011) Maternal smoking in pregnancy and birth defects: a systematic review based on 173 687 malformed cases and 11.7 million controls. *Hum Reprod Update* 17(5):589-604
- Landesamt für Verbraucherschutz Sachsen-Anhalt (2014) *Auswirkungen der Umwelt auf die Gesundheit von Kindern Schulanfängerstudie Sachsen-Anhalt 1991 – 2014*. www.verbraucherschutz.sachsen-anhalt.de (Accessed: 03/14/2016)
- Lange M, Butschalowsky HG, Jentsch F et al. (2014) Die erste KiGGS-Folgebefragung (KiGGS Welle 1). Studiendurchführung, Stichprobendesign und Response. *Bundesgesundheitsblatt – Gesundheitsforschung – Gesundheitsschutz* 50(7):747-761. www.edoc.rki.de (Accessed: 03/21/2016)
- Montgomery SM, Ekblom A (2002) Smoking during pregnancy and diabetes mellitus in a British longitudinal birth cohort. *BMJ* 324(7328):26-27
- Mund M, Louwen F, Klingelhofer D et al. (2013) Smoking and pregnancy- a review on the first major environmental risk factor of the unborn. *Int J Environ Res Public Health* 10(12):6485-6499
- Pattenden S, Antova T, Neuberger M et al. (2006) Parental smoking and children's respiratory health: independent effects of prenatal and postnatal exposure. *Tob Control* 15(4):294-301
- Rogers JM (2008) Tobacco and pregnancy: overview of exposures and effects. *Birth Defects Res C Embryo Today* 84(1):1-15
- Schneider S, Maul H, Freerksen N et al. (2008) Who smokes during pregnancy? An analysis of the German Perinatal Quality Survey 2005. *Public Health* 122(11):1210-1216
- Scholz R, Voigt M, Schneider KT et al. (2013) Analysis of the German Perinatal Survey of the Years 2007-2011 and Comparison with Data From 1995-1997: Maternal Characteristics. *Geburtshilfe Frauenheilkd* 73(12):1247-1251 **Depart**

Table 1
Percentage of mothers who smoked during pregnancy among 0 to 6-year-old girls according to social status

	Prevalence of smoking during pregnancy	
	%	(95%-CI)
Girls	12.3	(9.7–15.5)
Social status		
Low	29.8	(20.5–41.1)
Medium	10.1	(7.4–13.6)
High	2.6	(1.4–5.0)
Overall (girls and boys)	12.1	(10.2–14.2)

Table 2
Percentage of mothers who smoked during pregnancy among 0 to 6-year-old boys according to social status

	Prevalence of smoking during pregnancy	
	%	(95%-CI)
Girls	11.8	(9.4–14.8)
Social status		
Low	26.7	(17.2–39.1)
Medium	12.0	(9.3–15.4)
High	1.9	(1.1–3.4)
Overall (girls and boys)	12.1	(10.2–14.2)

Editorial Staff

Robert Koch Institute
Department of Epidemiology and Health Monitoring
Martina Rabenberg, Johannes Zeiher, Dr. Laura Krause,
Panagiotis Kamtsiuris, Dr. Thomas Ziese
General-Pape-Straße 62-66
12101 Berlin, Germany

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