

Tobacco in Australia

Facts & Issues

Relevant news and research

3.6 Reproductive Health

Last updated September 2019

Research:

Szkup M, Jurczak A, Karakiewicz B, Kotwas A, Kopec J, et al. Influence of cigarette smoking on hormone and lipid metabolism in women in late reproductive stage. Clin Interv Aging, 2018; 13:109-15. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/29398911>

Li J, Wu Q, Wu XK, Zhou ZM, Fu P, et al. Effect of exposure to second-hand smoke from husbands on biochemical hyperandrogenism, metabolic syndrome and conception rates in women with polycystic ovary syndrome undergoing ovulation induction. Hum Reprod, 2018. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/29471520>

Budani MC, Fensore S, Di Marzio M, and Tiboni GM. Cigarette smoking impairs clinical outcomes of assisted reproductive technologies: A meta-analysis of the literature. Reprod Toxicol, 2018. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/29906539>

Salvarci A, Gurbuz AS, Uzman S, Kaya M, and Gorkemli H. Comparison of embryo morphokinetics following intracytoplasmic sperm injection in smoker and non-smoker couples: Are the results different? J Pak Med Assoc, 2017; 67(10):1552-7. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/28955073>

Pajovic B, Pajovic L, and Vukovic M. Effectiveness of antibiotic treatment in infertile patients with sterile leukocytospermia induced by tobacco use. Syst Biol Reprod Med, 2017;1-6. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/28886262>

Jenkins TG, James ER, Alonso DF, Hoidal JR, Murphy PJ, et al. Cigarette smoking significantly alters sperm DNA methylation patterns. Andrology, 2017. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/28950428>

Jandikova H, Duskova M, and Starka L. The influence of smoking and cessation on the human reproductive hormonal balance. Physiol Res, 2017; 66(Supplementum 3):S323-S31. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/28948816>

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Tobacco in Australia

Facts & Issues

Rzymski P, Niedzielski P, Rzymski P, Tomczyk K, Kozak L, et al. Metal accumulation in the human uterus varies by pathology and smoking status. *Fertil Steril*, 2016. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/26921623>

Akison LK, Andraweera PH, Bertoldo MJ, Brown HM, Cuffe JS, et al. The current state of reproductive biology research in australia and new zealand: Core themes from the society for reproductive biology annual meeting, 2016. *Reprod Fertil Dev*, 2016. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/27918727>

Xu B, Chen M, Yao M, Ji X, Mao Z, et al. Metabolomics reveals metabolic changes in male reproductive cells exposed to thirdhand smoke. *Sci Rep*, 2015; 5:15512. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/26489853>

Xirofotou D, Trakakis E, Peppas M, Chrelias C, Panagopoulos P, et al. The amount and duration of smoking is associated with aggravation of hormone and biochemical profile in women with pcos. *Gynecol Endocrinol*, 2015:1-4. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/26507209>

Stramova X and Kandar R. Determination of seminal plasma malondialdehyde by high-performance liquid chromatography in smokers and non-smokers. *Bratisl Lek Listy*, 2015; 116(1):20-4. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/25666957>

Polotsky AJ, Allshouse AA, Casson PR, Coutifaris C, Diamond MP, et al. Impact of male and female weight, smoking, and intercourse frequency on live birth in women with polycystic ovary syndrome. *J Clin Endocrinol Metab*, 2015:jc20151178. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/25856211>

Metzler-Guillemain C, Victorero G, Lepoivre C, Bergon A, Yammine M, et al. Sperm mrnas and micrnas as candidate markers for the impact of toxicants on human spermatogenesis: An application to tobacco smoking. *Syst Biol Reprod Med*, 2015:1-11. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/25821920>

Lotti F, Corona G, Vitale P, Maseroli E, Rossi M, et al. Current smoking is associated with lower seminal vesicles and ejaculate volume, despite higher testosterone levels, in male subjects of infertile couples. *Hum Reprod*, 2015; 30(3):590-602. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/25567620>

Lingappa HA, Govindashetty AM, Puttaveerachary AK, Manchaiah S, Krishnamurthy A, et al. Evaluation of effect of cigarette smoking on vital seminal parameters which influence fertility. *J Clin Diagn Res*, 2015; 9(7):EC13-5. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/26393133>

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Tobacco in Australia

Facts & Issues

Kumar SB, Chawla B, Bisht S, Yadav RK, and Dada R. Tobacco use increases oxidative DNA damage in sperm - possible etiology of childhood cancer. *Asian Pac J Cancer Prev*, 2015; 16(16):6967-72.

Available from: <http://www.ncbi.nlm.nih.gov/pubmed/26514476>

Kovac JR, Khanna A, and Lipshultz LI. The effects of cigarette smoking on male fertility. *Postgrad Med*, 2015:1-4. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/25697426>

Kim SK, Jee BC, and Kim SH. Histone methylation and acetylation in ejaculated human sperm: Effects of swim-up and smoking. *Fertil Steril*, 2015. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/25910569>

Jandikova H, Duskova M, Simunkova K, Racz B, Hill M, et al. The steroid spectrum during and after quitting smoking. *Physiol Res*, 2015; 64 Suppl 2:S211-8. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/26680482>

Hyland A, Piazza K, Hovey KM, Tindle HA, Manson JE, et al. Associations between lifetime tobacco exposure with infertility and age at natural menopause: The women's health initiative observational study. *Tob Control*, 2015. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/26666428>

Gallicchio L, Miller SR, Kiefer J, Greene T, Zacur HA, et al. The associations between body mass index, smoking, and alcohol intake with ovarian volume in midlife women. *J Womens Health (Larchmt)*, 2015. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/26667258>

Chiaffarino F, Ricci E, Cipriani S, Chiantera V, and Parazzini F. Cigarette smoking and risk of uterine myoma: Systematic review and meta-analysis. *Eur J Obstet Gynecol Reprod Biol*, 2015; 197:63-71. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/26706924>

Radin RG, Hatch EE, Rothman KJ, Mikkelsen EM, Sorensen HT, et al. Active and passive smoking and fecundability in danish pregnancy planners. *Fertil Steril*, 2014; 102(1):183-91 e2. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/24746741>

Morotti E, Battaglia B, Fabbri R, Paradisi R, Venturoli S, et al. Cigarette smoking and cardiovascular risk in young women with polycystic ovary syndrome. *Int J Fertil Steril*, 2014; 7(4):301-12. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/24520500>

HA, Chen YL, and Kantaria KN. Association of cigarette smoking with reproductive hormone levels and semen quality in healthy adult men in taiwan. *J Environ Sci Health A Tox Hazard Subst Environ Eng*, 2014; 49(3):262-8. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/24279617>

tobaccoinaustralia.org.au

Tobacco in Australia

Facts & Issues

Harte CB. Concurrent relations among cigarette smoking status, resting heart rate variability, and erectile response. *J Sex Med*, 2014; 11(5):1230-9. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/24576257>

Cinar O, Dilbaz S, Terzioğlu F, Karahalil B, Yucel C, et al. Does cigarette smoking really have detrimental effects on outcomes of ivf? *Eur J Obstet Gynecol Reprod Biol*, 2014; 174:106-10. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/24424210>

Camlin NJ, McLaughlin EA, and Holt JE. Through the smoke: Use of in vivo and in vitro cigarette smoking models to elucidate its effect on female fertility. *Toxicol Appl Pharmacol*, 2014; 281(3):266-75. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/25448442>

Brotman RM, He X, Gajer P, Fadrosch D, Sharma E, et al. Association between cigarette smoking and the vaginal microbiota: A pilot study. *BMC Infect Dis*, 2014; 14:471. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/25169082>

Bravi F, Parazzini F, Cipriani S, Chiaffarino F, Ricci E, et al. Tobacco smoking and risk of endometriosis: A systematic review and meta-analysis. *BMJ Open*, 2014; 4(12):e006325. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/25534211>

Anifandis G, Bounartzi T, Messini CI, Dafopoulos K, Sotiriou S, et al. The impact of cigarette smoking and alcohol consumption on sperm parameters and sperm DNA fragmentation (sdf) measured by halosperm((r)). *Arch Gynecol Obstet*, 2014; 290(4):777-82. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/24840110>

Merritt T, Mazela J, and Merritt A. Tobacco smoking and its consequences on reproductive health: The impact of a lifestyle choices including cigarette smoke exposure on fertility and birth defects. *Przegl Lek*, 2013; 70(10):779-83. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/24501794>

Ghaffari MA and Rostami M. The effect of cigarette smoking on human sperm creatine kinase activity: As an atp buffering system in sperm. *Int J Fertil Steril*, 2013; 6(4):258-65. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/24520449>

Khan A, Freeman-Wang T, Pisal N, and Singer A. Smoking and multicentric vulval intraepithelial neoplasia. *Journal of Obstetrics and Gynaecology*, 2009; 29(2):123-5. Available from: <http://www.informaworld.com/smpp/content~db=all?content=10.1080/01443610802668938>

Sherman J, Mount S, Evans M, Skelly J, Simmons-Arnold L, et al. Smoking increases the risk of high-grade vaginal intraepithelial neoplasia in women with oncogenic human papillomavirus. *Gynecologic Oncology*, 2008; 110(3):396-401. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/18586314>

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3.6.1 Menstrual function, menarche and menopause

Malek, AM, Vladutiu, CJ, Meyer, ML, Cushman, M, Newman, R, Lisabeth, LD et al. (2019). The association of age at menopause and all-cause and cause-specific mortality by race, postmenopausal hormone use, and smoking status. *Prev Med Rep*, 15, 100955. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/31367516>

Fernandez, MDM, Montes-Martinez, A, Pineiro-Lamas, M, Regueira-Mendez, C, & Takkouche, B. (2019). Tobacco consumption and premenstrual syndrome: A case-control study. *PLoS One*, 14(6), e0218794. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/31226148>

Peltier, MR, Flores, JM, Smith, PH, Roberts, W, Verplaetse, TL, Moore, KE et al. (2019). Smoking across the menopausal transition in a 10-year longitudinal sample: The role of sex hormones and depressive symptoms. *Nicotine Tob Res*. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/31058288>

Mishra, GD, Chung, HF, Gelaw, YA, & Loxton, D. The role of smoking in the relationship between intimate partner violence and age at natural menopause: a mediation analysis. *Womens Midlife Health*, 2018. 4, 1. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/30766712>

Jenabi, E, Khazaei, SP, & Veisani, YP. The relationship between smoking and dysmenorrhea: A meta-analysis. *Women Health*, 2018. 1-10. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/30481133>

No authors listed. Menstrual Cycle in Women who Co-use Marijuana and Tobacco: Erratum. *J Addict Med*, 2018. 12(6), 501. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/30383618>

Zhu, D, Chung, HF, Pandeya, N, Dobson, AJ, Cade, JE, Greenwood, DC et al. Relationships between intensity, duration, cumulative dose, and timing of smoking with age at menopause: A pooled analysis of individual data from 17 observational studies. *PLoS Med*, 2018. 15(11), e1002704. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/30481189>

Whitcomb BW, Purdue-Smithe AC, Szegda KL, Boutot ME, Hankinson SE, et al. Cigarette smoking and risk of early natural menopause. *Am J Epidemiol*, 2017. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/29020262>

Kosmider L, Delijewski M, Koszowski B, Sobczak A, Benowitz NL, et al. Slower nicotine metabolism among postmenopausal polish smokers. *Pharmacol Rep*, 2017; 70(3):434-8. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/29627689>

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Tobacco in Australia

Facts & Issues

Jasinska-Starczewska M, Szydlowska I, Mroczek B, Laszczynska M, Chlubek D, et al. The influence of cigarette smoke exposure on the copper concentration in the serum depending on the use of menopausal hormone therapy. *Biomed Res Int*, 2017; 2017:5732380. Available from:

<https://www.ncbi.nlm.nih.gov/pubmed/28884126>

Jung AN, Park JH, Kim J, Kim SH, Jee BC, et al. Detrimental effects of higher body mass index and smoking habits on menstrual cycles in Korean women. *J Womens Health (Larchmt)*, 2016. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/27603944>

Ju H, Jones M, and Mishra GD. Smoking and trajectories of dysmenorrhoea among young Australian women. *Tobacco Control*, 2016; 25(2):195-202. Available from:

<http://tobaccocontrol.bmj.com/content/25/2/195.abstract>

Yang HJ, Suh PS, Kim SJ, and Lee SY. Effects of smoking on menopausal age: Results from the Korean national health and nutrition examination survey, 2007 to 2012. *J Prev Med Public Health*, 2015; 48(4):216-24. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/26265667>

Weinberger AH, Smith PH, Allen SS, Cosgrove KP, Saladin ME, et al. Systematic and meta-analytic review of research examining the impact of menstrual cycle phase and ovarian hormones on smoking and cessation. *Nicotine Tob Res*, 2015; 17(4):407-21. Available from:

<http://www.ncbi.nlm.nih.gov/pubmed/25762750>

Tawfik H, Kline J, Jacobson J, Tehranifar P, Protacio A, et al. Life course exposure to smoke and early menopause and menopausal transition. *Menopause*, 2015. Available from:

<http://www.ncbi.nlm.nih.gov/pubmed/25803667>

Smith RL, Flaws JA, and Gallicchio L. Does quitting smoking decrease the risk of midlife hot flashes? A longitudinal analysis. *Maturitas*, 2015. Available from:

<http://www.ncbi.nlm.nih.gov/pubmed/26149340>

Sagan D, Stepniak J, Gesing A, Lewinski A, and Karbownik-Lewinska M. Higher lipid peroxidation in former-smokers vs. Never-smokers - study in postmenopausal women. *Neuro Endocrinol Lett*, 2015; 36(6):557-63. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/26812290>

Mayor S. Smoking worsens effect of early menopause on mortality, study finds. *British Medical Journal*, 2015; 351:h4292. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/26254444>

Jenabi E and Poorolajal J. The association between hot flushes and smoking in midlife women: A meta-analysis. *Climacteric*, 2015:1-5. Available from:

<http://www.ncbi.nlm.nih.gov/pubmed/26488934>

tobaccoinaustralia.org.au

Tobacco in Australia

Facts & Issues

Goletiani NV, Siegel AJ, Lukas SE, and Hudson JI. The effects of smoked nicotine on measures of subjective states and hypothalamic-pituitary-adrenal axis hormones in women during the follicular and luteal phases of the menstrual cycle. *J Addict Med*, 2015. Available from:

<http://www.ncbi.nlm.nih.gov/pubmed/25783522>

Bellavia A, Wolk A, and Orsini N. Differences in age at death according to smoking and age at menopause. *Menopause*, 2015. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/26240946>

Rzymiski P, Rzymiski P, Tomczyk K, Niedzielski P, Jakubowski K, et al. Metal status in human endometrium: Relation to cigarette smoking and histological lesions. *Environ Res*, 2014; 132:328-33. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/24834829>

Pru JK. Genetic predisposition to ovotoxic effects of smoking may hasten time to menopause. *Menopause*, 2014; 21(7):685-6. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/24915508>

Ju H, Jones M, and Mishra GD. Smoking and trajectories of dysmenorrhoea among young Australian women. *Tob Control*, 2014. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/25403655>

Cochran C, Gallicchio L, Miller S, Zacur H, and Flaws J. Cigarette smoking, androgen levels, and hot flushes in midlife women. *Obstetrics and Gynecology*, 2008; 112(5):1037-44. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2673540/pdf/nihms-108532.pdf>

Bertone-Johnson E, Hankinson S, Johnson S, and Manson J. Cigarette smoking and the development of premenstrual syndrome. *American Journal of Epidemiology*, 2008; 168(8):938-45. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2727205/>

Keeling D. Combined oral contraceptives and the risk of myocardial infarction. *Annals of Medicine*, 2003; 35:413-18. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/14572165>

3.6.2 Fertility

Dupont, C, Faure, C, Daoud, F, Gautier, B, Czernichow, S, Levy, R, & group, AC. (2019). Metabolic syndrome and smoking are independent risk factors of male idiopathic infertility. *Basic Clin Androl*, 29, 9. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/31304019>

Niederberger, C. (2019). Re: Tobacco Smoking and Semen Quality in Infertile Males: A Systematic Review and Meta-Analysis. *J Urol*, 10109701JU00005744007188627. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/31232628>

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Tobacco in Australia

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Boeri, L, Capogrosso, P, Ventimiglia, E, Pederzoli, F, Cazzaniga, W, Chierigo, F et al (2019). Heavy cigarette smoking and alcohol consumption are associated with impaired sperm parameters in primary infertile men. *Asian J Androl*. Available from:

<https://www.ncbi.nlm.nih.gov/pubmed/30829290>

Bundhun, PK, Janoo, G, Bhurtu, A, Teeluck, AR, Soogund, MZS, Pursun, M, & Huang, F. Tobacco smoking and semen quality in infertile males: a systematic review and meta-analysis. *BMC Public Health*, 2019. 19(1), 36. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/30621647>

Rockhill, K, Tong, VT, Boulet, SL, Zhang, Y, Jamieson, DJ, & Kissin, DM. Smoking and Clinical Outcomes of Assisted Reproductive Technologies. *J Womens Health (Larchmt)*, 2019. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/30615563>

Shrem, G, Brudner, Y, Atzmon, Y, Michaeli, M, Ellenbogen, A, & Shalom-Paz, E. The influence of obesity, smoking, and serum follicular stimulating hormone in azoospermic patients on testicular sperm extraction-intra cytoplasmic sperm injection outcomes: A retrospective cohort study. *Medicine (Baltimore)*, 2019. 98(4), e14048. Available from:

<https://www.ncbi.nlm.nih.gov/pubmed/30681561>

Wesselink, AK, Hatch, EE, Rothman, KJ, Mikkelsen, EM, Aschengrau, A, & Wise, LA. Prospective study of cigarette smoking and fecundability. *Hum Reprod*, 2018. Available from:

<https://www.ncbi.nlm.nih.gov/pubmed/30576495>

Axelsson, J, Sabra, S, Rylander, L, Rignell-Hydbom, A, Lindh, CH, & Giwercman, A. Association between paternal smoking at the time of pregnancy and the semen quality in sons. *PLoS One*, 2018. 13(11), e0207221. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/30462692>

Freour, T, Massart, P, Garcia, D, Vassena, R, & Rodriguez, A. Revisiting the association between smoking and female fertility using the oocyte donation model. *Reprod Biomed Online*, 2018.

Available from: [https://www.rbmojournal.com/article/S1472-6483\(18\)30459-0/fulltext](https://www.rbmojournal.com/article/S1472-6483(18)30459-0/fulltext)

Hamad, MF, Dayyih, WAA, Laqqan, M, AlKhaled, Y, Montenarh, M, & Hammadeh, ME. The status of global DNA methylation in the spermatozoa of smokers and non-smokers. *Reprod Biomed Online*, 2018. Available from: [https://www.rbmojournal.com/article/S1472-6483\(18\)30457-7/fulltext](https://www.rbmojournal.com/article/S1472-6483(18)30457-7/fulltext)

Practice Committee of the American Society for Reproductive Medicine. Electronic address, a. a. o., & Practice Committee of the American Society for Reproductive, M. Smoking and infertility: a committee opinion. *Fertil Steril*, 2018. 110(4), 611-618. Available from:

<https://www.ncbi.nlm.nih.gov/pubmed/30196946>

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Tobacco in Australia

Facts & Issues

Gunes, S, Metin Mahmutoglu, A, Arslan, MA, Henkel, R. Smoking-induced genetic and epigenetic alterations in infertile men. *Andrologia*. 2018 Aug 22:e13124. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/30132931>

Sansone A, Di Dato C, de Angelis C, Menafrà D, Pozza C, et al. Smoke, alcohol and drug addiction and male fertility. *Reprod Biol Endocrinol*, 2018; 16(1):3. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/29334961>

Ranganathan P, Rao KA, Sudan JJ, and Balasundaram S. Cadmium effects on sperm morphology and semenogelin with relates to increased ros in infertile smokers: An in vitro and in silico approach. *Reprod Biol*, 2018. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/29729841>

Alkhaled Y, Laqqan M, Tierling S, Lo Porto C, Amor H, et al. Impact of cigarette-smoking on sperm DNA methylation and its effect on sperm parameters. *Andrologia*, 2018. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/29315717>

Silva JV, Cruz D, Gomes M, Correia BR, Freitas MJ, et al. Study on the short-term effects of increased alcohol and cigarette consumption in healthy young men's seminal quality. *Sci Rep*, 2017; 7:45457. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/28367956>

Sahin Ersoy G, Zhou Y, Inan H, Taner CE, Cosar E, et al. Cigarette smoking affects uterine receptivity markers. *Reprod Sci*, 2017; 24(7):989-95. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/28285568>

Mostafa RM, Nasrallah YS, Hassan MM, Farrag AF, Majzoub A, et al. The effect of cigarette smoking on human seminal parameters, sperm chromatin structure and condensation. *Andrologia*, 2017. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/29124782>

Mohamad Al-Ali B and Eredics K. Synergistic effects of cigarette smoking and varicocele on semen parameters in 715 patients. *Wien Klin Wochenschr*, 2017. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/28439698>

Laqqan M, Tierling S, Alkhaled Y, Porto CL, Solomayer EF, et al. Aberrant DNA methylation patterns of human spermatozoa in current smoker males. *Reprod Toxicol*, 2017; 71:126-33. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/28576685>

Huyghe S, Verest A, Thijssen A, and Ombelet W. Influence of bmi and smoking on iui outcome with partner and donor sperm. *Facts Views Vis Obgyn*, 2017; 9(2):93-100. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/29209485>

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Hamad M, Shelko N, Montenarh M, and Hammadeh ME. The impact of cigarette smoking on protamines 1 and 2 transcripts in human spermatozoa. *Hum Fertil (Camb)*, 2017;1-7. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/28969455>

Camlin NJ, Jarnicki AG, Vanders RL, Walters KA, Hansbro PM, et al. Grandmaternal smoke exposure reduces female fertility in a murine model, with great-grandmaternal smoke exposure unlikely to have an effect. *Hum Reprod*, 2017; 32(6):1270-81. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/28402417>

Al Khaled Y, Tierling S, Laqqan M, Lo Porto C, and Hammadeh ME. Cigarette smoking induces only marginal changes in sperm DNA methylation levels of patients undergoing intracytoplasmic sperm injection treatment. *Andrologia*, 2017. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/28503748>

Aboulmaouahib S, Madkour A, Kaarouch I, Sefrioui O, Saadani B, et al. Impact of alcohol and cigarette smoking consumption in male fertility potential: Looks at lipid peroxidation, enzymatic antioxidant activities and sperm DNA damage. *Andrologia*, 2017. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/29164649>

Yang F, Li L, Chen JP, Liu XQ, Zhong CL, et al. Couple's infertility in relation to male smoking in a chinese rural area. *Asian J Androl*, 2016. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/26763542>

Ventimiglia E, Montorsi F, and Salonia A. Re: Reecha sharma, avi harlev, ashok agarwal, sandro c. Esteves. Cigarette smoking and semen quality: A new meta-analysis examining the effect of the 2010 world health organization laboratory methods for the examination of human semen. *Eur urol*. In press. <http://dx.doi.org/10.1016/j.eururo.2016.04.010>. *Eur Urol*, 2016. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/27317089>

Thompson J. Active and passive smoking linked to infertility and early menopause. *Practitioner*, 2016; 260(1789):5. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/27180496>

Sharma R, Harlev A, Agarwal A, and Esteves SC. Cigarette smoking and semen quality: A new meta-analysis examining the effect of the 2010 world health organization laboratory methods for the examination of human semen. *Eur Urol*, 2016. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/27113031>

Sapra KJ, Barr DB, Maisog JM, Sundaram R, and Buck Louis GM. Time-to-pregnancy associated with couples' use of tobacco products. *Nicotine Tob Res*, 2016. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/27190399>

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Facts & Issues

Ozmen S, Dulger S, Coban S, Ozmen OA, Guzelsoy M, et al. Olfactory and erectile dysfunction association in smoking and non-smoking men. *Physiol Behav*, 2016; 160:1-5. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/27037193>

Oboni JB, Marques-Vidal P, Bastardot F, Vollenweider P, and Waeber G. Impact of smoking on fertility and age of menopause: A population-based assessment. *BMJ Open*, 2016; 6(11):e012015. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/27864244>

Nio-Kobayashi J, Abidin HB, Brown JK, Iwanaga T, Horne AW, et al. Cigarette smoking alters sialylation in the fallopian tube of women, with implications for the pathogenesis of ectopic pregnancy. *Mol Reprod Dev*, 2016. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/27704662>

Marom-Haham L and Shulman A. Cigarette smoking and hormones. *Curr Opin Obstet Gynecol*, 2016; 28(4):230-5. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/27285958>

Leiber C and Wetterauer U. The cigarette and the sperm: A fatal liaison? *Eur Urol*, 2016. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/27181831>

Kline J, Tang A, and Levin B. Smoking, alcohol and caffeine in relation to two hormonal indicators of ovarian age during the reproductive years. *Maturitas*, 2016; 92:115-22. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/27621248>

Keskin MZ, Budak S, Gubari S, Durmaz K, Yoldas M, et al. Do cigarette and alcohol affect semen analysis? *Arch Ital Urol Androl*, 2016; 88(1):56-9. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/27072177>

Hawkins Bressler L, Bernardi LA, De Chavez PJ, Baird DD, Carnethon MR, et al. Alcohol, cigarette smoking, and ovarian reserve in reproductive-age african-american women. *Am J Obstet Gynecol*, 2016. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/27418446>

Harlev A, Esteves SC, Sharma R, and Agarwal A. Reply from authors re: Lieber c, wetterauer u. The cigarette and the sperm: A fatal liaison? *Eur urol*. In press: The cigarette and the sperm: Causality dilemma no more? *Eur Urol*, 2016. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/27210459>

Esteves SC, Agarwal A, Sharma R, and Harlev A. Reply to eugenio ventimiglia, montorsi francesco, and andrea salonia's letter to the editor re: Reecha sharma, avi harlev, ashok agarwal, sandro c. Esteves. Cigarette smoking and semen quality: A new meta-analysis examining the effect of the 2010 world health organization laboratory methods for the examination of human semen. *Eur urol*. In press. <http://dx.doi.org/10.1016/j.eururo.2016.04.010>. *Eur Urol*, 2016. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/27289568>

tobaccoinaustralia.org.au

Tobacco in Australia

Facts & Issues

Esakky P and Moley KH. Paternal smoking and germ cell death: A mechanistic link to the effects of cigarette smoke on spermatogenesis and possible long-term sequelae in offspring. Mol Cell Endocrinol, 2016. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/27424142>

Dong H, Wang Y, Zou Z, Chen L, Shen C, et al. Abnormal methylation of imprinted genes and cigarette smoking: Assessment of their association with the risk of male infertility. Reprod Sci, 2016. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/27247128>

DeLay KJ and Hellstrom WJ. Semen proteome alterations in the smoking male: A non-generalizable study. BJU Int, 2016; 118(5):673-4. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/27753465>

Cui X, Jing X, Wu X, Wang Z, and Li Q. Potential effect of smoking on semen quality through DNA damage and the downregulation of chk1 in sperm. Mol Med Rep, 2016. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/27221653>

Asare-Anane H, Bannison SB, Ofori EK, Ateko RO, Bawah AT, et al. Tobacco smoking is associated with decreased semen quality. Reprod Health, 2016; 13(1):90. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/27496053>

Antoniassi MP, Intasqui P, Camargo M, Zylbersztejn DS, Carvalho VM, et al. Analysis of the functional aspects and seminal plasma proteomic profile of sperm from smokers. BJU Int, 2016; 118(5):814-22. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/27208688>

Antoniassi MP, Intasqui Lopes P, Camargo M, Zylbersztejn DS, Carvalho VM, et al. Analysis of the sperm functional aspects and seminal plasma proteomic profile from male smokers. BJU Int, 2016. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/27208688>

Zhang M, Zhang QS, Zheng HS, Wang XY, Feng SQ, et al. Clinical, demographic and psychological characteristics of infertile male smokers in northeast china. J Int Med Res, 2015. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/26647076>

Yousefniapasha Y, Jorsaraei G, Gholinezhadchari M, Mahjoub S, Hajiahmadi M, et al. Nitric oxide levels and total antioxidant capacity in the seminal plasma of infertile smoking men. Cell J, 2015; 17(1):129-36. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/25870842>

Harlev A, Agarwal A, Gunes SO, Shetty A, and du Plessis SS. Smoking and male infertility: An evidence-based review. World J Mens Health, 2015; 33(3):143-60. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/26770934>

tobaccoinaustralia.org.au

Tobacco in Australia

Facts & Issues

Dai JB, Wang ZX, and Qiao ZD. The hazardous effects of tobacco smoking on male fertility. Asian J Androl, 2015. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/25851659>

Yu B, Qi Y, Liu D, Gao X, Chen H, et al. Cigarette smoking is associated with abnormal histone-to-protamine transition in human sperm. Fertil Steril, 2014; 101(1):51-7 e1. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/24112532>

Yarosh SL, Kokhtenko EV, Churnosov MI, Solodilova MA, and Polonikov AV. Joint effect of glutathione s-transferase genotypes and cigarette smoking on idiopathic male infertility. Andrologia, 2014. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/25348056>

Stramova X, Cegan A, Hampl R, and Kandar R. Effects of smoking on fatty acid composition of phospholipid sperm membrane and the malondialdehyde levels in human seminal plasma. Andrologia, 2014. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/25311153>

Shrivastava V, Marmor H, Chernyak S, Goldstein M, Feliciano M, et al. Cigarette smoke affects posttranslational modifications and inhibits capacitation-induced changes in human sperm proteins. Reprod Toxicol, 2014; 43:125-9. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/24345728>

Niederberger C. Re: Cigarette smoking is associated with abnormal histone-to-protamine transition in human sperm. J Urol, 2014; 192(4):1193. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/25304589>

Battaglia C, Battaglia B, Mancini F, Persico N, Nappi R, et al. Cigarette smoking decreases the genital vascularization in young healthy, eumenorrheic women. Journal of Sexual Medicine, 2011; [Epub ahead of print]. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/21477023>

Waylen A, Metwally M, Jones G, Wilkinson A, and Ledger W. Effects of cigarette smoking upon clinical outcomes of assisted reproduction: A meta-analysis. Human Reproduction Update, 2009; 15(1):31–44. Available from: <http://humupd.oxfordjournals.org/content/15/1/31.long>

Klonoff-Cohen H, Natarajan L, Marrs R, and Yee B. Effects of female and male smoking on success rates of ivf and gamete intra-fallopian transfer. Human Reproduction, 2001; 16(7):1382–90. Available from: <http://humrep.oxfordjournals.org/cgi/content/full/16/7/1382>

Barbieri RL. The initial fertility consultation: Recommendations concerning cigarette smoking, body mass index, and alcohol and caffeine consumption. American Journal of Obstetrics and Gynecology, 2001; 185(5):1168–73. Available from: http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6W9P-45SR5B8-

tobaccoinaustralia.org.au

Tobacco in Australia

Facts & Issues

[40& user=10& rdoc=1& fmt=& orig=search& sort=d&view=c& version=1& urlVersion=0& useri
d=10&md5=3513a812898f93109316929b2526c6fc](http://www.ncbi.nlm.nih.gov/pubmed/29863428)

Howe G, Westhoff C, Vessey M, and Yeates D. Effects of age, cigarette smoking, and other factors on fertility: Findings in a large prospective study. British Medical Journal (Clinical Research Ed.), 1985; 290(6483):1697-700. Available from:

<http://www.pubmedcentral.nih.gov/picrender.fcgi?artid=1416131&blobtype=pdf>

3.6.4 Sexual function

Aykurt Karlibel I, Dulger S, Kasapoglu Aksoy M, Guzelsoy M, Turkoglu AR, et al. Effect of cigarette smoking on sexual functions, psychological factors, and disease activity in male patients with ankylosing spondylitis. Aging Male, 2018;1-7. Available from:

<https://www.ncbi.nlm.nih.gov/pubmed/29863428>

Wen LM, Rissel C, Cheng Y, Richters J, and de Visser RO. Tobacco smoking and sexual difficulties among australian adults: A cross-sectional study. Sex Health, 2017. Available from:

<http://www.ncbi.nlm.nih.gov/pubmed/28514995>

Rew KT and Heidebaugh JJ. Erectile dysfunction. Am Fam Physician, 2016; 94(10):820-7. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/27929275>

Biebel MG, Burnett AL, and Sadeghi-Nejad H. Male sexual function and smoking. Sex Med Rev, 2016; 4(4):366-75. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/27872030>

Aggarwal N, Kherada S, Gocher S, and Sohu M. A study of assessment of sexual dysfunction in male subjects with opioid dependence. Asian J Psychiatr, 2016; 23:17-23. Available from:

<http://www.ncbi.nlm.nih.gov/pubmed/27969072>

Huang YC, Chin CC, Chen CS, Shindel AW, Ho DR, et al. Chronic cigarette smoking impairs erectile function through increased oxidative stress and apoptosis, decreased nnos, endothelial and smooth muscle contents in a rat model. PLoS ONE, 2015; 10(10):e0140728. Available from:

<http://www.ncbi.nlm.nih.gov/pubmed/26491965>

Choi J, Shin DW, Lee S, Jeon MJ, Kim SM, et al. Dose-response relationship between cigarette smoking and female sexual dysfunction. Obstet Gynecol Sci, 2015; 58(4):302-8. Available from:

<http://www.ncbi.nlm.nih.gov/pubmed/26217601>

tobaccoinaustralia.org.au

Tobacco in Australia

Facts & Issues

Bolat MS, Akdeniz E, Ozkaya S, Batur AF, Kutman KG, et al. Smoking and lower urinary tract symptoms. *Urol J*, 2015; 12(6):2447-51. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/26706744>

Kovac JR, Labbate C, Ramasamy R, Tang D, and Lipshultz LI. Effects of cigarette smoking on erectile dysfunction. *Andrologia*, 2014. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/25557907>

Costa RM and Peres L. Smoking is unrelated to female sexual function. *Subst Use Misuse*, 2014. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/25290661>

Battaglia C, Battaglia B, Mancini F, Persico N, Nappi R, et al. Cigarette smoking decreases the genital vascularization in young healthy, eumenorrheic women. *Journal of Sexual Medicine*, 2011; [Epub ahead of print]. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/21477023>

Tengs T and Osgood N. The link between smoking and impotence: Two decades of evidence. *Preventive Medicine*, 2001; 32(6):447–52. Available from: http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6WPG-4576DDW-11&_user=10&_rdoc=1&_fmt=&_orig=search&_sort=d&view=c&_version=1&_urlVersion=0&_userid=10&md5=2e44a9fd0389e91733e657b3c5ba0701

News reports:

3.6 Reproductive health

US Department of Health and Human Services. Women and smoking. A report of the US Surgeon General, Atlanta, Georgia: US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2001. Available from: http://www.cdc.gov/tobacco/data_statistics/sgr/sgr_2001/index.htm.

3.6.1 Menstrual function, menarche and menopause

No authors listed. Swedish study reveals combined effects of smoking and early menopause on overall mortality, in *News Medical* 2015. Available from: <http://www.news-medical.net/news/20150805/Swedish-study-reveals-combined-effects-of-smoking-and-early-menopause-on-overall-mortality.aspx>.

tobaccoinaustralia.org.au

Tobacco in Australia

Facts & Issues

3.6.2 Fertility

Hamzelou J. Sperm age calculator tells men how decrepit their sperm are, in *New Scientist* 2017. Available from: <https://www.newscientist.com/article/mg23631481-500-sperm-age-calculator-tells-men-how-decrepit-their-sperm-are/>.

Borrelli L. 6 ways cigarette smoking can lead to fertility problems. *International Business Times*, 2017. Available from: <http://www.ibtimes.com/6-ways-cigarette-smoking-can-lead-fertility-problems-2556871>

No authors listed. Smoking may have negative effects on sperm quality, in *Medical News Today* 2016. Available from: <http://www.medicalnewstoday.com/releases/311119.php>.

Doyle K. More evidence that smoking worsens semen quality, in *Reuters* 2016. Available from: <http://www.reuters.com/article/us-health-smoking-semen-idUSKCN0XQ280>.

Davies M. Even passive smoking may raise the risk of infertility by 20% and bring forward the menopause by 2 years. *Mail on Sunday*, 2015. Available from: <http://www.mailonsunday.co.uk/health/article-3360927/Even-PASSIVE-smoking-raise-risk-infertility-20-bring-forward-menopause-2-YEARS.html>