MATHEMATICAL MODELING OF PREMENSTRUAL SYNDROME RISK IN WOMEN OF CHILD-BEARING AGE
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Aim: to perform integral estimation of premenstrual syndrome (PMS) risk in women of child-bearing age. Materials and methods. We performed mathematical analysis of data obtained from 300 women (mean age 27.6 ± 0.24 years, Me 27.0 years, IQR 23.0-32.0). The modified Bayesian treatment with normalizing intensive and integrated parameters and predictor weight variables by Shigan E.N. (1986) was used for the integral estimation. Relative risk (RR) value, etiological fraction (EF) as well as various risk factors' strength of casualty was calculated. Relative risk was considered low at RR<1, moderate at RR from 1 to 2 and high at RR>2. Strength of casualty was estimated as almost full-scale at EF=81-100%, as very high and high at EF=67-80% and 51-66%, respectively, and as low at EF<33%. Results and discussion. The identified PMS risk factors were ranked, their predictor weight variables being calculated. PMS risk was found to increase by effect of various stress factors (by 9.7 times), excess body mass (by 6.3 times) and age increment (by 5.3 times in women over 30 years). Given RR and EF, almost full-scale PMS strength of casualty is associated with stress (RR=9.66; EF=89.65%), excess body mass (RR=6.33; EF=84.2%) and age over 30 years. Hereditary burden by PMS, sexual frustration as well as less than 2 deliveries in medical history enhances the likelihood of PMS by 8.3, 3.8 and 3.2 times, respectively. Thus, very high strength of PMS casualty is associated with susceptibility to PMS (RR=3.80; EF=73.70%), absence of intimate partner (RR=3.40; EF=70.6%) and low delivery parity (RR=3.25; EF=69.22%). Female white collars, such as, university lectures, school teachers, accountants, economic operators, business managers and students turned out to be in the risk group, the risk increment being 2.3 times (RR=2.67; EF=62.53%). PMS interferes with their both professional and social activity, hampering interpersonal relations. Social risk of PMS enhances (by 2.3 times, RR=2.25; EF=55.56%) by increase in both work and public load, especially in full-time working respondents. In addition, high strength of casualty is associated with residence, PMS risk being higher in city dwellers by 2.1 times (RR=2.11; EF=52.54%). High infection index in the puberty (RR=1.88; EF=46.78%), inflammatory diseases of the genitals (RR=1.73; EF=42.33%) as well as miscarriages and abortions in medical history (RR=1.57; EF=36.14%) are the adverse factors for hypothalamic-pituitary system's inefficiency subsequently transforming into PMS. Conclusions. Stress, excess body mass, age over 30 years, PMS hereditary burden, sexual frustration and low delivery parity are main factors giving rise to PMS in women of child-bearing age.