

OPINION

from

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Subject: Dissertation on a topic "Importance of breastfeeding for the health of children up to 3 years of age, born in families with a high risk of allergy" by Miglena Iordanova Marinova-Achkar MD – doctoral student in full-time study in the doctoral program "Hygiene" (incl. labor, communal, school, radiation, etc) of Department of "Hygiene and Epidemiology", Medical University of Varna "Prof. Dr. P. Stoyanov", in the District of Higher Education 7. Health and Sports, Professional direction 7.1. Medicine, Scientific specialty "Hygiene" for awarding the educational and scientific degree "Doctor", enrolled by order No. R-109-44/01.02.2019.

Pursuant to order R-109-191/15.03.2023 and Protocol № 1/27.03.2023, I have been elected as a member of the Scientific Jury and I am assigned to prepare an opinion.

BIOGRAPHICAL DATA

Miglena Iordanova Marinova-Achkar MD graduated Medical University of Varna in 1989. She started working as a neonatologist at the Multidisciplinary Hospital for Active Treatment - Razgrad, and later in the Newborn sector of the Maternity Department of the Multidisciplinary Hospital for Active Treatment "St. Anna", Varna. Since 2009, when a separate new Neonatal Department was established in the same hospital till now, she is the Head of the Department of Neonatology. She has two majors recognized – in pediatrics and neonatology – since 1999 and since 2007 respectively.

Her professional development is entirely related to neonatology, with the study of neonatal physiology and pathology, maintaining and increasing her qualifications through participation in numerous courses and specializations for postgraduate training - local and abroad (Internship in neonatology at the University Hospitals of Graz and Salzburg, Austria - 2007 and 2010), in Ashkelon, Israel (1999), Training in public health in maternal and child's health, Trieste, Italy (2008) and others.

Dr. Marinova is an established neonatologist, with very good theoretical and practical training and a desire for self-improvement with scientific interests in the field of maternal and child's health and the importance of nutrition for child's development, as it is obvious by her numerous participations in national and international scientific forums. The development of the current dissertation work is a logical step in this direction.

She is a member of the Bulgarian Association of Neonatology, World Newborn Association, ESPGHAN, BULSPGHAN.

She has an excellent command of written and spoken English and Russian.

The incidence of allergic diseases has increased in recent years nationally and worldwide, and this is the result of the independent or combined influence of multiple constitutional, age-related and epigenetic factors. Studies on the role of nutrition on the growth and development of children from the neonatal period are relevant, given the positive and negative effects in the short and long term.

Breastfeeding as a way of feeding of the newborn has a proven effect in terms of the functional maturation of the gastrointestinal tract and the formation of the intestinal microbiota – a modulator of the immunoregulatory function, a reduction in the incidence of infectious and allergic diseases, the normal growth of the brain, a prerequisite for the development of neurocognitive functions and reducing the risk of chronic diseases in later age periods. In the last decade, there has been a marked interest in this direction both among medical specialists and among mothers, in line with WHO recommendations for exclusive breastfeeding in the first 6 months of child's life, as well as its impact on health from childhood to adulthood.

Dr. Marinova's presented dissertation discusses some of these aspects related to breastfeeding, which makes it relevant and significant. The topic is dissertable. The scientific work is structured according to the requirements and it is written on 154 standard pages.

The literature view is based on a recent bibliography, containing 306 titles, of which 31 in Cyrillic and 275 in Latin. 30.1% of the publications are from the last 5 years, and 57.8% from 5 to 10 years. The medico-social significance of allergic diseases by type of clinical manifestation and arranged according to their age distribution, the influence of the most common factors increasing the risk of their occurrence, the role of the pregnant woman's diet and breastfeeding of the newborn – goldenstandard in baby's nutrition are examined in the dissertation's review. The impact of breastfeeding duration on atopic dermatitis, food allergy, allergic asthma and acute respiratory tract infections was tracked. The data presented on the growth and neurodevelopment of children with atopy are interesting, as well as their different interrelationship with overweight and obesity in the later stages of life.

The literature review is quite voluminous (about 1/3 of the dissertation work, but it is structured well, it shows a detailed study and a very good knowledge of the available literary data on the developed problem by the author and her skill to summarize. It makes a good impression that the conflicting results of the studies cited in the bibliography are presented throughout the text, which indirectly leads to the identification of the unresolved points. This partially compensates the lack of a review conclusion, which would better motivate the need for the development of the current dissertation work. In addition, I do not consider it appropriate for the bibliography to include self-citation – publication № 12, which is also presented in the list of publications attached to the dissertation work.

The purpose of the dissertation is precisely formulated. 4 main tasks were set, specifying the directions and details of the study.

Material and methods

120 full-term newborns (54 girls and 66 boys) from families with a high risk of developing allergies were included and studied. The inclusion and exclusion criteria, the technology of data collection and processing are described in details. The signs of observation included in the questionnaires, the evaluation scales used for the appearance of skin allergy and suspected allergy to cow's milk protein. The listed statistical methods for analyzing the obtained results guarantee their reliability.

To this section it is appropriate:

- to specify the age for monitoring the neurodevelopment of the included children, since the indicated interval "2-3 years" is wide.

- to describe the WHO standards for assessing growth and development, which appear in the "results" section

- it is understandable that the survey method is the main method for gathering the information from the parents, but the question still arises as to how far the assessment of their neurodevelopment is sufficiently objective. I assume that the author of the dissertation has convinced herself of the reliability of the information, based on her professional experience

and knowledge.

Results and discussion

The study showed a familial predisposition to allergy in 56.7% of mothers, 45% of fathers and 33.3% of siblings. The highest frequency is asthma and rhinoconjunctivitis among parents, and atopic dermatitis and rhinoconjunctivitis among siblings. Atopic dermatitis is found in about 1/3 of the examined children and is not influenced by gender. No differences are proven regarding the type of feeding in the neonatal period and the type of allergic manifestation. The data from the study points out the negative impact of allergies on the growth of the included children at the age of 2, valid for both girls and boys.

Analysis of acute morbidity in food allergy cases demonstrates the role of exclusive breastfeeding in reducing hospitalizations in girls. In the group of breast-fed children, the frequency of various types of allergic manifestations is relatively low - with the leading appearance of urticaria in females - 14.8% and atopic dermatitis in boys - 18.2%. The research also establishes the importance of the duration of breastfeeding - only 1/5 of those breastfed for a period of 6-12 months have signs of allergy. Despite statistically insignificant differences in the results in this point, there is a marked decrease in the overall frequency and by types of allergies for the above-mentioned interval.

The follow-up of the influence of breastfeeding on the neurodevelopment of children of both genders is an experiment with an original element. The regression model for the influence of the multiple factors involved in this line of the research excludes the insignificant for children's neurodevelopment.

The discussion uses the data from the literature sources, compared with the own results, but this is insufficient. It could be more comprehensive if the personal views of the dissertation student and an interpretation of some of the obtained results were included in it: for example - the increase in the general frequency of allergies and in particular atopic dermatitis, urticaria and food allergy in children breastfed for more than 12 months, compared to those breastfed for a shorter time (6-12 months).

The separation of the results and discussions into separate sections has led to the repetition of the results in their discussion, which unnecessarily complicates the exposition.

The overview of the dissertation consists of 31 tables, 6 figures and 11 appendices, which are well presented and sufficiently informative. Appendices bring additional clarity and knowledge to a research problem.

Based on her own research, Marinova MD formulates 4 **conclusions** with sub-conclusions that correspond to the tasks set at the beginning of the dissertation work. I believe that some of them contain already described results and could be presented in a more generalized and synthesized form.

I accept **the contributions** of the dissertation work, some of them of an original nature. It is necessary to emphasize that the scientific development is the result of long-term work, professional experience, perseverance and tenacity of the doctoral student, despite the difficulties, and is her personal work.

The dissertation student presents **the 4 publications (1 in a foreign journal) and 7 participations in scientific forums (4 international)** related to the dissertation work, which is in accordance with the requirements.

The abstract reflects the essence of the scientific development and is well structured. Both the dissertation and the abstract are grammatically and stylistically correct, written in an accessible and understandable language.

The remarks made in the relevant sections do not reduce the value of the scientific work.

Conclusion:

My comprehensive evaluation of the dissertation work “Importance of breastfeeding for the health of children up to 3 years of age, born in families with a high risk of allergy” is **positive**.

The dissertation of Miglena Iordanova Marinova-Achkar MD is up to-date, with scientific-theoretical and practical significance. The author is a proven neonatologist, with extensive professional experience and qualifications, with interests in the field of scientific research. The scientific work meets the requirements laid down in the Law on the development of the academic composition and the Regulations for the activities of Medical University of Varna for awarding the educational and scientific degree "Doctor".

I strongly do recommend the Members of the esteemed Scientific Jury to award ONS "Doctor" in scientific specialty "Hygiene" to Miglena Iordanova Marinova-Achkar MD.

10.04.2023

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