

REVIEW
of the dissertation of
D-r Nikolay Vasilev Stanev
on the topic:
“INFLUENCE OF PARENTS ON CHILDREN’S ORAL HEALTH ”,
presented in a procedure for obtaining the educational and scientific degree "Doctor of
Philosophy" at the Medical University-Varna "Prof. Dr. Paraskev Stoyanov ",
“Faculty “Dental medicine”, Department “Pediatric dental medicine”
in the field of higher education: 7. Public Health and Sports,
Professional domain 7.2. Dental medicine, Scientific speciality: "Pediatric Dentistry"

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member of a scientific jury appointed by Order № P-109-98 / 04.03.2022 Varna

General characteristics of the dissertation - volume and structure.

The dissertation is written on 120 typewritten pages, including text, 29 tables, 14 diagrams, 4 figures and 9 appendices - 92 pages.

The content consists of an introduction, literature review - 39 pages, purpose and objectives of the study, material and methods - 7 pages (total - 47 pages). The main part of the dissertation consists of 6 parts - results of 1 task and discussion, results of 2 task and discussion, results of 3 task and discussion, results of 4 task and discussion (page 90 is missing - technical error), results of 5 task and discussion, results of 6 task and discussion. Conclusions, summaries of 1-6 tasks, contributions and recommendations (65 pages in total). The literary review has a bibliography of 402 literature sources - 5 in Cyrillic and 197 in Latin.

The author reviews contemporary literature sources that provide comprehensive information that parents, as well as the whole family have a great influence on the development and promotion of children's behavior to maintain their oral health and build proper health habits. In their research, many authors have proven a link between children's oral health and family characteristics, parents' health knowledge, and their attitude toward oral health. Many factors have been identified that may indirectly affect the health habits of parents and thus may affect the oral health of their children - education, socio-economic status, current health knowledge, attitude and behavior towards oral health and oral diseases. Opinions are being discussed as to whether mothers need to have the health knowledge in order to teach their children appropriate oral hygiene skills, healthy eating habits and healthy practices. The prevailing opinion is that parents' knowledge of the oral health is crucial for the transmission of health practices to their children.

Relevance and significance of the topic.

Given what is known in the specialised literature, Dr. Stanev shows scientific interest in the health knowledge of the parents in relation to the oral health of their children. His research is aimed at creating conditions for improving the health knowledge of parents with the active participation of dentists, who with their knowledge and skills can enrich the knowledge and motivation of parents to create and maintain healthy habits in their children. Dr. Stanev takes the initiative to create and implement a program for training and motivation of parents to improve their health knowledge about the oral health of children aged 6 to 10 years old.

Purpose of the scientific paper and tasks.

From the very beginning it is clear that the set goal and the resulting tasks are incorrectly formulated without coordination with each other. The discrepancy distorts the study and does not support the proper execution of the research. My arguments for this are the following: Dr. Stanev aims to establish whether there is a connection between the health knowledge of parents and the oral health of their children. Thus formulated, the goal does not allow for the progress of scientific research (it is exhausted only with the implementation of the first and second and third tasks). The goal in this case sounds like the first part of the planned study. From the tasks we can guess that the second part of the work is to improve the oral health of children by increasing parental knowledge (to develop and implement a program for training and motivation of parents, etc.). These two basic points make research possible and should have changed the wording of the goal.

Six tasks have been identified, which should actually be sub-tasks of the two main tasks: 1. Establish whether there is a link between the health knowledge of parents and the oral health of their children 2. Change the health knowledge of the parents in order to change the oral health of their children.

Nature of scientific work.

The section "**Material**" includes objects of the study - parents and their children and is the same for the whole study. Therefore, there is no reason to describe it by tasks. The author describes the units of observation in children, but units of observation in parents are not specified. Nowhere in the results later gender data are considered. The logical question then is, why are they grouped by gender - does it matter? The author does not communicate the materials, instruments, means for the implementation of the tasks, except for those of 5 task. The materials used are not described later in the methodology (s). In the section "Methods" there is confusion of methods, structure of research, elements of methodology. In fact, there is no real description of the methods used. They should be - survey method (to list the surveys carried out), clinical method (examine the oral status of the children) and statistical method (alternative analysis, etc). There is an incorrect description of the Methods chapter in the available text. The methods used should not be described for each task separately. They should be described as general research methods and listed one after the other. It could be clarified which task the corresponding method is used for in brackets. Their

presentation is in a summarised form. The survey method is presented as a survey with an assessment of relative shares in a group of surveyed parents, which is not the right approach. Caries risk assessment is not a method, but part of the methodology of the clinical research, which should explain how, when and why it is done. It is a mistake to evaluate fluoride prophylaxis, the child's diet, dental status separately - these are elements of the risk assessment. The diagnostic threshold must be specified, but there is a discrepancy here as well. The text says that the threshold DIMF ($T + t$) is selected, and in the attached table you can see D1a, D1b. All the so-called "methods" are elements of the risk assessment. The statistical methods are also not described correctly. They should be for example - alternative analysis, correlation analysis, etc.

The biggest perplexity is the lack of **research methodology**, which in this case makes the claim for a study meaningless. The methodology of a scientific study is the design by which it is performed. This methodology describes the stages of the research, their sequence, explains the place of application of the different research methods, shows at any particulate moment on what part of the used/ observed material the different methods are applied. The chosen methodology should allow the implementation of individual tasks and subtasks in order to achieve the goal. Although not described, it is clear that the methodology used by the author is completely wrong and can not provide reliable results. The main requirement for a scientific study is to select two groups - experimental and control. In this case, the experimental and control group should be for both children and parents. All baseline studies (survey method determines parents' health knowledge; clinical method determines children's oral status) are performed in the same way in both groups. In the presented dissertation such groups are not determined, there is no methodology for performing the initial research. Scientific research requires that the initial data obtained be verified and validated by the absence of a reliable difference between them. Only the the experiment can be started - in this case to apply a program for training and motivation of parents in the experimental group of parents. It is not to be applied in the control program. There is no methodology for development, content and application of the program, which I consider a big mistake. As a rule, after the end of the experiment the initial researches are carried out again in both groups of children and parents, a statistical comparison is made in the final results of the studied parameters in both groups and only then results can be reported and it becomes clear whether the goal has been achieved. This is the only possible way to prove the effect of the experiment (the effect of the program). The fact is that such a methodology of the scientific research has not been carried out. In this case, there is no doubt that the results obtained may be due to a number of random factors, which in no way could be an evidence of the effectiveness of the experimental methods used (parent training and motivation program). It is no coincidence that today we are already talking about evidence-based medical research. **The research methodology** is the backbone of the dissertation and without it one could not speak about scientific research and scientific work. Everything described so far is the main responsibility of the supervisor, who is obliged to monitor the correct structure, the correct layout of the goal, tasks, material, methods, methodology and of course the results. The supervisor is the one who has the responsibility to train the PhD student how to carry out properly a scientific research.

One of the main shortcomings in the "Results" chapter is that under the relevant tables and diagrams there is a description and repetition of the data. This has nothing to do with scientific analysis, which should be present and explain the occurrences and their significance. In the submitted dissertation, this is valid for each table and diagram. In the diagrams there are only percentages without numeric data which is completely incorrect (the tables from which these diagrams are derived are not presented in the appendix). There is no data from the control group (the reason is explained above). For the purposes of the research, the data should be given alongside for the experimental and control groups and then the difference should be estimated by statistical parameters. The implementation of the scientific stages and follow-up of the results should be monitored by supervisor. The tables in the dissertation are subject for criticism because they are incorrectly worded and uninformative. Inside the tables there are figures and percentages of one attribute/ factor, and below them there is a percentage of -95%, then brackets and some values, but what? It is not described anywhere. If this is a 95% confidence interval, and there are chi-square values in the brackets, it means an absolute misunderstanding of the statistics. This criterion is used to look for a relationship between two, three or more factors. It shows, for example, that DMFT values depend on age, gender, oral hygiene, sugar diet, etc. What is obvious in this dissertation is that statistics are not understood correctly, therefore they are not applied correctly and the "results" are statistically unsupported. The so-called analysis below the tables is just a representation of the data. There is no real analysis. The data from questions 23-37 of the incoming survey (in the first task) the author has decided not to give tables and the representation is not objectified.

The results of the whole second task (Tables 4-17) again give a percentage distribution by one attribute, and below is given some interval of confidence and values, obviously for chi-square, which is an absolute error and ignorance about the use of this statistical indicator. Moreover, the initial data presented do not have numerical values (average values), which makes them completely unsuitable for comparison after the end of the experiment. For example, Table 7, entitled Oral Hygiene, has a percentage distribution of children in the three groups - low, medium and high risk. There are no average values of the oral hygiene index, which could be used for comparison later. If everything has been done, non-parametric analysis must have been applied as a statistical method and used to determine the mean values, standard deviation, which is compared with the t-test. Surprisingly, in the "results" of each task there is confusion between results, material, methods and elements of methodology. ~~This is quite a simple and gross error.~~

In the results of the third task there is a table, which is a titled 'working material' (Table 18). The second column of this table doesn't explain what it describes. Only in Table 19 there is a parallel presentation of two signs, which is a reason to make a correlation, but instead we see only the sign of reliability p less ($<$) or greater ($>$) than 0.05. However, it is not clear, between which elements. Here, another question arises, according to which criteria and where in the methodology these criteria are discussed, which distribute the parents according to the level of knowledge - low, satisfactory and high? Tables 20 and 21 are relatively well structured, but there is a totally unclear and insufficient analysis. Again, it is

not clear how parental knowledge is determined - what indicators have been used, what scale has been used, by which author, etc. or again with another words there is a lack of methodology. There is no clear indication of the correlation between parents' knowledge and children's oral health. There is no grading of the influencing factors. There is no link with the oral hygiene and the sugary diet, which are common comparison parameters at the end of the study.

The fourth task is the so-called parent training program. There is an attempt to describe the methodology, albeit incompletely. The place of this text is in the missing chapter - a methodology, where one has to describe in detail and justify why such questions have been used, why this approach has been used, etc. This text is followed by diagrams (from 6 to 14) with input data that have no place in the so-called program, but instead need to be at the beginning (1 task) when describing the source data. Then tables 22, 23 follow, again with input data, again with indicators for relative share and completely inappropriate chi-square, it is unclear why and how. The chapter of this task ends with some elements of methodology, but by no means this is the methodology for the development and application of this program. In reality, there is no real element of this program. The program itself is missing - attached applications **don't** represent a program.

The fifth task, which sounds like materials for the program, is puzzling. It is not clear what is it - some words sequences attempting to look like sentences, but is this a methodology, or maybe a recommendation? In any case, the methodology is missing, and the results as an outcome from the listed motivational materials could not be considered.

I am completely puzzled by the results of the sixth task. Without methodology, it is completely wrong to start discussing results from the missing program. It is methodologically absurd and inappropriate to do separate training for parents and children, during the implementation of a prevention program. In order to prove the thesis that the knowledge of the parents determines the oral health of the children, the program had to cover only the parents. Not the children!!! This is the only way to show the influence of parental knowledge! After the program had been implemented on the parents, the children should have been examined again for the basic parameters of dental health - oral hygiene, high-carbohydrate diet, number of reversible carious lesions, and if there is a decrease in the mean values of OHI, reversible carious lesions and in children's knowledge and consumption of high-carbohydrate diet compared to the one in the beginning, this would mean that the program works and could be applied. In addition, a comparison should have been made with the control group, in which there should be no improvement in oral health or even deterioration at the end of the study. Only such results would make a dissertation meaningful.

Accuracy of the assessment of the state of the dissertation at the moment

Unfortunately, the submitted scientific paper doesn't have the characteristics of a scientific research. It does not meet the requirements for a scientific work. The lack of methodology, the lack of properly selected groups and the lack of a control group make the receiving of valid data impossible. There is no program to influence the parental knowledge,

it is not clear whether something was implemented and how, and there is no evidence of the effect of the so-called program. The lack of control groups and the incorrect application of statistical methods reinforces the effect of inadequate comparisons. There is a lack of knowledge to use tables and charts. There is a lack of knowledge for processing the results and for analysis. There is a scientific hypothesis (Parents' health knowledge affects children's oral health), but it has not been proven, as the approach to solving this problem has been wrong. There is a lack of scientific supervision. The text does not meet the requirements for dissertation. In this case, I will refrain from making any comments about the conclusions, summary and contributions made by the PhD student.

Conclusion. The considered dissertation work of Dr. NS is up-to-date, but it does not have all the compulsory elements, there is no correctly formulated goal, and the tasks have to be restructured. The scientific work suffers most severely from the lack of research methodology, which has led to incompetent results. The results obtained in this way do not enrich the knowledge in the field of paediatric dentistry and are not really applicable in practice. Dr. N.S. does not show qualities for dealing with scientific tasks, which gives me a reason to state categorically that this research should be done again according to the set rules, it needs to be redone and the shortcomings which have been pointed out need to be corrected. For the dissertation developed in this way, I believe that to Dr N.Stanev cannot be awarded the educational and scientific degree "Doctor".

18.04.2022

Sofia

A handwritten signature in blue ink, appearing to read 'Stanev', is written in a cursive style.